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January 20, 2005

Wisconsin Department of Natural Resources Bureau of Water Resources Management Attn: Bernie C. Robertson, P.E. 2514 Morse St. Janesville, WI 53545

RE:

Facilities Plan Review Comments Response – Wastewater Collection and WWTF Dekorra Utility District No. 1, Town of Dekorra, Columbia County, WI

GEC #1297-89a

Dear Bernie:

I have made corrections/clarifications/modifications to the above noted Facilities Plan based on George Osipoff, Ron Grasshoff, and your comments both verbal at meetings and written. My response comments will try to follow previous letter or memo numbering for clarity.

DNR 8/2/04 Facilities Plan Review Letter:

1. In the late 1990s the Town of Dekorra and the Village of Poynette functioned independently of each other as they had in the years past. Occasionally there were disagreements over residential or commercial development in the boundary areas that would bring the two groups together for discussions. Annexation was and is a topic that causes blood pressures to rise particularly in the Township. Both groups have a mutual respect for each other but annexation and land use issues can cause lines to be drawn.

Both the Dekorra and Poynette have worked on land use issues in the past but with the Smart Growth Comprehensive Planning requirements by the state, these two communities must now work together in their future land use and development planning.

In 2002, the Towns of Dekorra and Lowville and the Village of Poynette opted to join together in their Smart Growth planning efforts. Vandewalle Associates was selected as their planning agent. "Attachment A" to this letter is information from Vandewalle Associates regarding the Smart Growth planning process. Included is a time line schedule for the planning process between the three communities for 2002 through 2004. Dekorra has its draft Comprehensive Plan up for review and available on Vandewalle's web site. Poynette should have their draft plan available for public review shortly.

Part of the development strategy that the two committees have agreed to is regarding specific specific growth development areas and other protected areas. It has been generally agreed upon that the Village is in a much better position to provide services for residential subdivision development and certain areas of Dekorra (190-94-39-CS interchange) are more

General Engineering Co., Inc. Page 2 January 21, 2005

suitable for highway, commercial, and industrial development. Dekorra is not interested in residential development in and around the interchange area. Poynette may develop commercial/industrial development, however, it most likely will be along the Highway 51 corridor in the areas that are convenient for sanitary sewer and water extensions.

Annexation of town land may be a consideration, however, only in lands bordering on the Village. The annexation issue has not been a significant concern along the Highway CS corridor because of the physical barriers (wetlands) along the east and south corporate limits of Poynette. Poynette and Dekorra are in the process of developing an intergovernmental boundary & land use agreement. This agreement will allow both communities to grow separately yet co-exist effectively.

A significant part of Dekorra's planned growth is at the Interstate interchange area (Dekorra Utility District No. 1). This area has been a topic of development discussion for a number of years with the knowledge that if sewer could be provided for the interchange, it would indeed develop. If done properly it would provide an economic benefit to the Township as a whole. In the last 5-6 years the Township has expended significant time and energy in considering the possibilities for development of the interchange area. The primary issue is that of sewer service in order to draw development.

- 2. Included as Attachment B1 is Mead & Hunt's "Environmental Screening of Facilities Development Actions" for the rest areas. Included as Attachment B2 is General Engineering Company's Environmental Assessment of the proposed actions.
- 3. Enclosed as Attachment C is the revised Facilities Plan page 2 noting alternative No. 4 as the recommended alternative.
- 4. Included as Attachment D is revised page 7 of the Facilities Plan regarding regional flood definition.
- 5. Based on DNR recommendations, a geotechnical firm (Midwest Engineering Services, Inc.) was contracted to perform a site sub-surface soils investigation including the installation of three temporary groundwater-monitoring wells in the area of the proposed seepage cells. Four test pits were dug with a mini excavator by Doherty Construction prior to placement of the monitoring wells for review by the MES hydrogeologist. A record of their site review, test pit soil evaluation, and particle-sized distribution curves is included as Attachment E1.

We also asked the hydrogeologist (Brian Youngwirth) to estimate soil permeability for the material analyzed. Their estimation was that this soil appeared to contain "moderate permeable" soils with a permeability range of 1 x 10 ⁻⁹ to 1 x 10 ⁻¹⁰ cm². Although there is no direct correlation between permeability and hydraulic conductivity, we noted the Columbia County soils manual referenced the three soils listed in this area (PfD, WxD2, PkB) to have between 0.6 and 20 "/hr hydraulic conductivity. A typical was about 6 "/hr. We also referenced "Introductory Soil Mechanics and Foundations" by Sowers and Sowers. Although permeability and hydraulic conductivity seem to be intermingled, it lists medium

General Engineering Co., Inc. Page 3 January 21, 2005

permeability as 1 x 10 $^{-1}$ to 1 x 10 $^{-3}$ cm/sec as the coefficient of permeability for sand and fine sand. They list low permeability as 1 x 10 $^{-3}$ to 1 x 10 $^{-5}$ cm/sec for silty sand and dirty sand. In order to get a more exact hydraulic conductivity Mr. Youngwirth recommended a field test for the field permeability of the soils by bailing the monitoring wells dry and measuring the recovery rate of the groundwater through the soil. He did estimate that a hydraulic conductivity of 1 x 10 $^{-3}$ to 1 x 10 $^{-4}$ cm/sec would be reasonable for this soil. The average (5 x 10 $^{-4}$ cm/sec) equates to 0.71"/hour.

The three groundwater monitoring wells installed have been checked multiple times since their installation on August 17, 2004. The tests show a relatively stable groundwater elevation in this area of approximately 778 USGS. Attachment E1 provides our detailed review/explanation of the September 2004 Midwest Engineering Services (MES) report. The attached groundwater monitoring well data and groundwater direction/gradient exhibits showed the groundwater flow in a N70°W direction with a gradient of 0.02 ft/ft (0.2%).

I was comfortable with the gradient and soil type review but felt the monitoring wells may have been in too close proximity to obtain a valid groundwater bearing. I had anticipated a more northerly bearing based on site conditions and my experience. In follow-up discussions with the DNR, concern was also noted over the seasonal high groundwater elevation that would accompany a 100 year flood event and the specific groundwater direction (bearing). The Utility District was initially hesitant to construct additional monitoring wells if land issues could not be resolved.

After significant discussion and several meetings it was determined that the DNR would consider allowing the DOT and Utility District to trade lands suitable for the DNR needs for lands needed by the DOT/U.D. for the rest area expansion and wastewater treatment facilities (WWTF). If cost effective, the DNR preferred a WWTF location just south of Rest Area #11. We believed a WWTF located north of that rest area to be the most cost effective choice if use of a groundwater effluent system could be verified.

On December 29,2004 two additional monitoring wells were constructed. Midwest Engineering Services (MES) report on these wells plus the groundwater bearing and gradient data (Attachment E2) verifies this site is the preferred WWTF site. Information included shows the typical groundwater bearing is N29°W at a 0.03 ft/ft gradient. As a reference the interstate in this area has a bearing of roughly N23°W.

On the basis of the information determined through the sub-surface site reconnaissance, the construction of 5 monitoring wells and MES report information we are comfortable considering this area of the DNR property for seepage cell construction. We could use 0.71 "/hr in the planning phase sizing for the seepage cells but experience has shown that a conservative approach is always appropriate. We will utilize a 50% clogging factor which results in a design hydraulic conductivity of 0.36 "/hr. Refer to enclosed exhibits that show the potential seepage cell size for the design year (0.266 mgd). There is sufficient lands available adjacent to that cell area for a 0.500 mgd capacity.

General Engineering Co., Inc. Page 4 January 21, 2005

I recall the nearby Harmony Grove-Okee Wastewater Treatment Plant's Facilities Plan considered the soils at their site to have a hydraulic conductivity of 0.71 "/hr. The actual design calculations estimated a 50% clogging of the soil and reduced the hydraulic conductivity to 0.36 "/hr.

You will note we have not considered a seepage cell area for the "ultimate" build-out capacity of this treatment facility (0.845 mgd). If this facility expands beyond the 0.5 mgd capacity, we will most likely consider a surface water discharge of effluent as an option. We acknowledge there may be a point where surface water discharge is a reasonable consideration for this facility. It should be noted that introducing a new surface water discharge into the Wisconsin River upstream of the Lake Wisconsin area might be politically difficult. We recall the significant problems encountered by the City of Portage in the early 1980s when it chose to discharge into the Wisconsin River rather than the Fox River.

- 6. Your comments regarding the nitrogen variance are appreciated. We will prepare a nitrogen and Chloride variance request to the DNR upon acceptance of the facilities plan.
- 7. Refer to Item 5.
- 8. Refer to the documentation provided for Item 5 (Attachments E1 and E2).
- 9. The DOT proposed layout (see Attachment F) shows that additional property will be required for the Rest Area expansion. The DOT and their consultant (Mead & Hunt) have indicated the additional acreage to be 20 acres for Rest Area 11 and 15 acres for Rest Area 12. We were not involved in the details of the Rest Area expansion project. We have coordinated jointly on the transfer and treatment of the wastewater from the two rest areas.
- 10. Mead & Hunt's option for expanding the existing on-site treatment system at the DOT Rest Areas is shown in Attachment G. It is our understanding that the land area required for the rest area expansion would cover the existing on-site drain fields making them unusable. New and future replacement on-site drainage beds would have to be located according to the attachment G exhibits. The layout for Rest Area 11 shows that significant DNR land will be required to construct on-site drain fields. The layout for Rest Area 12 has changed from the attachment G drawing but the private farmland area needed for this option would be similar.

Utilizing on-site treatment methods require more land overall than that of working out a wastewater treatment option with the Dekorra Utility District. The on-site treatment option would have required the taking of private lands (Paul Black farm) adjacent to both Rest Area 11 as well as Rest Area 12.

11. Mead & Hunt has confirmed that the existing DOT on-site systems have not experienced failures in the past. They did note the existing systems are quickly reaching their design capacity (refer to Attachment B1). It is our understanding the DOT's concerns with the treatment of their wastewater was three-fold:

General Engineering Co., Inc. Page 5 January 21, 2005

- In developing the upgraded rest areas the DOT would construct the largest on-site
 wastewater treatment system in the state. There have been problems in the past with other
 large on-site drainfield failures.
- The on-site treatment system costs were compared to that of transferring their wastewater to "other" locations for treatment by higher order treatment plants (Poynette or Dekorra U.D.).
- The impact to adjoining property owners by the forced taking of their lands was another very tangible concern. The DOT was already under fire by adjacent and area property owners for noise, groundwater and stormwater runoff issues.

The ability to reduce the land impact issues, get someone else to treat their wastewater and remain cost effective with their budget constraints led the DOT and Mead & Hunt to the Dekorra Utility District and ultimate consideration of the Utility District option.

- 12. Enclosed is information (Attachment H) from the Columbia County Planning & Zoning Department regarding on-site system failures and holding tank installations in this area of the Town of Dekorra which includes Dekorra Sanitary District No. 1 and other lakeside/riverside properties that have a potential of being considered for the Utility District WWTF. Also included is a letter from Tom Robson, the County's On-site Wastewater Specialist, which discusses his understanding of the systems in the project area. I contacted Mr. Robson recently and although this letter is dated August 30, 2000 his views on this area have not changed.
- 13. Attachment I1 shows the possible cost breakdown for a wastewater collection and treatment system to serve only the DOT Rest Areas. Please note this wastewater treatment plant is anticipated to be located at or near the same location as proposed in this Facilities Plan for the Utility District.

A cost estimate was also prepared previously for the DOT Rest Areas for an alternative collection and treatment option (see Attachment I2). That option was to transfer their wastewater to the existing Poynette WWTP. Working with the Utility District was found to be the better solution for the DOT. If the DOT would extend a sewage forcemain to Poynette the Village could handle that wastewater. We know that if this forcemain is constructed the businesses in the interchange area will anticipate connecting to it. It could also open up possibilities of other areas between the interchange and Poynette along CS connecting to the forcemain. That raised the potential issue of annexation at the Town level and the Town is against annexation.

From the Village's perspective the potential of urban sprawl and possible 'unquantifiable' wastewater flows into the Village's WWTP caused immediate concerns. Their WWTP has its discharge into Rowan Creek with tight effluent mass loading limits allowed by DNR. If the Village allows areas outside their corporate boundaries to utilized significant amounts of their "future capacity" there may be political ramifications. Of greater concern is that the mass limits are fixed and future expansions of the Village's WWTP may require the consideration of tertiary treatment to meet the mass limits. This translates to increased

General Engineering Co., Inc. Page 6 January 21, 2005

costs to the Village that it could have avoided if it had declined the Rest Area 'Pandora's Box'.

14. The Village of Poynette included in their 1993 Facilities Plan an allocation of 50,000 gallons per day for a limited development option from the CTH CS interchange. At that time there was a potential for a strip mall in the southeast quadrant of the CS-l90/94/39 interchange. That development did not materialize at the time. In the 10 years to follow, the Village grew at a faster pace than what the Facilities Plan had estimated.

Poynette's population projection was listed at 2,011 for the year 2000 and projected to 2,676 in the year 2015. It is interesting to note that these estimates were significantly higher than the Department of Administration's estimate at the time. The DOA, in its more recent population projections, shows Poynette's year 2000 census at 2,266 and a projected population of 2,811 for the year 2015. Furthermore, the Village has significant developable acreage within its corporate boundaries that could allow an even more aggressive development trend. This is one reason the Village is somewhat hesitant to now give away some of its future development capacity.

Considering the Town's development plans for the interchange area and the potential volume of wastewater generated from that, Poynette is also concerned with the impact on the WPDES discharge permit it has for Rowan Creek. Rowan Creek is a Class B trout stream, downstream of the Poynette WWTP. Premature expansion of the treatment plant would require more stringent effluent limits because the mass loading to the stream has been fixed by the DNR.

From a political standpoint, there have been concerns over the potential for annexation of the interchange area by the Village if wastewater service were provided to that area. Although there is no documented evidence to that specific end (and both communities are cooperating on a multi-jurisdictional level regarding the Utility District's development) it does remain a real concern of the Township.

15. Section 3.4.3 of the Facilities Plan (page 17) refers to the significant areas of wetlands and high groundwater areas in the area between the interchange and the Wisconsin River. There are a multitude of private on-site wastewater systems around and along the lakefront and riverfront areas. That combined with shallow bedrock in some areas is why so many holding tanks have been required by the Columbia County Planning & Zoning Department.

In our quest for potential surface water discharge locations into either the wetland areas or Wayland Bay or even the backwater areas of the Wisconsin River, the DNR's determination was that very stringent effluent limits would be required for those sensitive areas. Surface water discharge would be required to extend into the main channel of the Wisconsin River in order to receive more relaxed effluent limits. This option, compared to other options is not cost competitive.

General Engineering Co., Inc. Page 7 January 21, 2005

- 16. Enclosed please find revised District maps (Attachment J) that identify the existing boundaries of Dekorra Utility District No. 1 and Dekorra Sanitary Districts No. 1 and 2.
- 17. Please refer to the maps from Item 16 (Attachment J) that show acreages for the various existing and future development areas as they apply.
- 18. Attachment E2 shows the area required for seepage cells for the 2025 projected flow of the 266,000 gpd capacity WWTP. The site also allows for additional seepage cells to be constructed either south or west of the proposed cells to accommodate a semi-ultimate flow of 0.50 mgd. These along with the mechanical portion of the facility can be constructed within a 20-acre parcel. As noted previously, we may consider surface water discharge to the Wisconsin River at some point in the future, possibly when the WWTP nears a 0.50 mgd capacity. This could reduce the ultimate acreage required for wastewater treatment and open the door for the return of seepage cell areas to a prairie restoration status.

The attachment shows our intent to locate the WWTP to an area that will minimize the impact to the wooded public hunting ground areas as well as preserve as much of the existing prairie restoration area as possible.

19. Tables 5-2 and 5-3 of the Facilities Plan report provide detailed breakdowns of the surface water discharge to the Wisconsin River alternate. There seems to be a concern that we did not consider a direct pipeline along the Interstate corridor to the Wisconsin River in our alternative planning for surface water discharge. The comment was also made that our unit price costs for the outfall sewer were unrealistic. This is incorrect. It would seem from the onset that a direct pipeline north along the Interstate corridor to the Wisconsin River would be a simple alternative. To a certain extent, that is correct.

The installation costs of the section of force main from the WWTF to the south top bank of the Wisconsin River would be similar to the force main leading to the WWTF from the Dekorra Utility District. The problem occurs in the last 1,000 feet of force main from the high ground near the south Wisconsin River bridge abutments, out to the main channel of the Wisconsin River, which is near the center pier abutment. Construction of this section of the force main would be extremely difficult considering the steep grades and greater amounts of open water to contend with (compared to our selected route). In addition, this option would require an effluent lift station, which adds initial construction costs and on-going maintenance and operation costs. The route to the north is approximately 1,000' farther than a route traveling directly west.

Our chosen option eliminates an effluent lift station and would allow for construction west, across shallower open water areas and across several sandbars prior to reaching the Wisconsin River's main channel. We consulted contractors who were involved in this type of construction and estimated the construction costs based on their recommendations. Directional boring in some of the stretches would be required. In our final review, the option to go directly west with the effluent outfall was the most direct route and more cost effective than the north route. That is why it was included in with Tables 5-2 and 5-3.

- 20. The state of Wisconsin owns lands along CTH J, just south of Rowan Creek. There was consideration of a potential wastewater treatment facility at this location. Isolation distances were a concern however, as noted on the updated Exhibit 5-1(Attachment K). Shallow groundwater was also a concern and the very stringent effluent limits for discharge to Rowan Creek were the third factor in eliminating this option from further consideration. We had also contacted property owners in and around this location to determine if possible WWTP lands may be available. All property owners were against taking their land out of production and off the tax roles for a wastewater treatment facility. The potential for future encroachment into the WWTP setback areas was much greater in these areas than at the selected site.
- 21. Your concern comments regarding chlorides is appreciated. It is our understanding that the Rest Areas will utilize water softeners. We will ask that it be a policy to minimize softener usage is implemented by the DOT. We will work with the Utility District to restrict water softener usage where possible as businesses develop in and around the interchange area. We will also be seeking a chloride variance as part of the nitrogen variance process due to the proximity of the seepage cells to the wetlands.

Included as attachment L is revised section 7.3 Economic Impact of the Selected Phased Alternative and Table 5-1. These pages required revision due to updated information since the Facilities Plan Report submittal in June 2004.

If you have any questions regarding this, please contact me.

Sincerely,

GENERALENGINEERING COMPANY, INC.

Jerry A. Foellmi

Registered Professional Engineer

JAF/jaf

Enclosures

Cc: George Osipoff, DNR

Pat Kaiser, DNR
Dave Simon, DOT
Dekorra Town Board

Ron Grasshoff, DNR Sue Finstad, Clerk Fred Teitgen, Chairman Rusty Chesmore, Mead and Hunt P. O. Box 340 Portage, WI 53901



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April 19, 2005

Wisconsin Department of Natural Resources Bureau of Water Resources Management Attn: Bernie C. Robertson, P.E. 2514 Morse St. Janesville, WI 53545

RE:

Facilities Plan Review - 2/28/05 DNR Planning Comments Response

Wastewater Collection and WWTF

Dekorra Utility District No. 1, Town of Dekorra, Columbia County, WI

GEC #1297-89a

Dear Bernie:

I have reviewed your February 28, 2005 planning comments letter and have the following responses and/or additional information to help finalize the Facilities Planning review process. My response comments will try to follow your numbering for clarity.

DNR February 28, 2005 Facilities Planning Comments Letter:

1) Item 1: There has been no specific updates to the "Intergovernmental Boundary and Land Use Agreement" referenced in my previous letter. Both entities continue to work on their Smart Growth planning in close parallel paths.

I believe the physical wetlands barrier between the Village and Town Utility District will prevent the Village from considering development options to the west along the CS corridor. This separation will continue to provide a level of "protection" for the Town from annexation. The Village has substantial lands within its corporate boundaries that can be developed more economically than the area along CS to the west.

The Utility District has been officially set to match Exhibit 2-1 in our January 20th response packet. The Utility District is in the process of having a boundary description prepared by a local surveying company.

2) Item 2: The following are the additional requested EA headings and their associated documentation:

PROJECT SUMMARY

1. The Town of Dekorra created its Utility District No. 1 in 1998 in response to an opportunity to provide sewer service to its CS/I39-90-94 interchange area. Commercial/industrial development of this interchange is viewed as a significant positive move in the Town's

General Engineering Co., Inc. Page 2 April 19, 2005

comprehensive planning efforts and one that would have tax benefit potential for the entire Township. The project would involve a collaborative effort between the Department of Transportation (DOT), because of the connection to the expanding Rest Areas 11 & 12, and the Dekorra U.D. No. 1.

The proposed project would have an impact on the Department of Natural Resources (DNR) due to their ownership of lands adjacent to the expanding Rest Areas 11 & 12 as well as ownership of lands seen as the most suitable for sighting the proposed wastewater treatment facilities (WWTF).

A Facilities Planning Report was prepared and submitted to the DNR that proposed a sewerage collection system and new wastewater treatment facility. This action initiated the Environmental Assessment (EA) review process.

The Facilities Planning Report recommends a collection system that runs primarily within the County and Interstate right-of-way corridors between CTH CS and the proposed WWTF just north of Rest Area 11. It also recommends a Sequencing Batch Reactor (SBR) wastewater treatment facility with seepage cell discharge to groundwater. The Facilities Plan and Environmental Assessment documents show the proposed action to be cost effective and environmentally sound.

The DNR action sought in this process is the approval of the Facilities Planning Report for the proposed new sewerage collection system and wastewater treatment facilities.

- 2. Supporting documents for the requested DNR approval are the following:
 - Facilities Planning Report Wastewater Collection & Treatment Facilities, Dekorra Utility District No. 1,
 - Environmental Assessment of the Proposed Actions Dekorra Utility District No. 1, General Engineering Company,
 - Environmental Screening of Facilities Development Actions DOT Rest Areas 11 & 12, Mead & Hunt,
 - Town of Dekorra Comprehensive Plan, Vandewalle & Associates,
 - Subsurface Site Reconnaissance Proposed WWTF Site, Midwest Engineering Services, Inc.,

DNR EVALUATION OF PROJECT SIGNIFICANCE

- 3. Environmental Effects and their Significance
 - a. Primary/Secondary Long-Term/Short-Term Environmental Effects
 - Primary Effects:
 - Surface water and groundwater quality is seen as a long-term positive effect.

 The surface water and groundwater of the Rowan Creek watershed should improve due to the elimination of existing and future on-site septic systems in the area of the Utility District development area. A similar claim can be made for the area around the DOT Rest Areas due to an improved effluent quality from the

General Engineering Co., Inc. Page 3 April 19, 2005

> proposed wastewater treatment facilities over the rest areas' existing large onsite systems.

There are no short-term surface water or groundwater quality effects anticipated. Although chapter 30 permits will be sought for the Rowan Creek forcemain crossing, we anticipate boring under the creek so as not to disturb the creek. Other construction activities at the WWTF will have erosion protection measures in place to protect the nearby marsh.

- <u>Land</u> required for the new WWTF is seen as a negative impact, long-term effect.
 Construction of the WWTF will reduce the open space plus grading and building the treatment units will change the shape of the landscape.
- Construction related noise, traffic and air quality impacts are seen as short-term negative impacts to the project area. Construction activities between 7 a.m. and 7 p.m. in this area of high interstate traffic will have temporary, negligible impacts on the residents in the area. Barricades and traffic flaggers will assist with traffic movement in construction areas.
- Flora and Fauna impacts should be temporary, short-term negative effects to the project area. Disturbed areas will be reseeded with mixtures similar to existing adjacent areas to maximize the recovery of the area. Some trees will be removed as part of the WWTF construction. The noise and commotion of the interstate traffic presently impacts the wildlife usage of the proposed WWTF site.
- Prime Agricultural Land Loss & Disruption of Agricultural Activities are not shortor long-term environmental issues. Neither the additional DOT expansion land nor the WWTF lands would be deemed prime agricultural lands and the lands are not used for Ag activities at this time.
- Wetlands and Floodplains are not impacted in the long-term by this project.
 There should be no short-term impacts either. The collection system (gravity sewer mains and forcemain) will be constructed in the rights-of-ways of county highways and the interstate corridor. The area of construction near Rowan Creek will be bored rather than open trench to protect the wetlands.
- Scenic or other Aesthetic Resources impacts by the collection system or WWTF
 construction operations are short-term issues. The collection system is
 underground which eliminates any long-term impacts.
- <u>Cultural, Historic and Archeological Features</u> in the areas of the collection system (rights-of-ways) and the WWTF site were disturbed as part of the highway or interstate construction process in the years past. No short-term or long-term impacts are expected.

General Engineering Co., Inc. Page 4 April 19, 2005

Secondary Effects:

- <u>Urbanization</u> of the Utility District is considered a long-term secondary impact on the area. Sewering Dekorra U.D. #1 will promote lands in the district to become developed. Development in this corridor is part of the Town's Smart Growth planning. The loss of open space and the loss of non-prime ag lands is the down side but a long-term positive impact may be tax relief which allows agriculture to remain as a mainstay on other lands of the Town.
- Storm water runoff and the potential impact on area wetlands and surface water are seen as a long-term negative impact of the U.D. urbanization. The District intends to protect those natural resources through enforcement of their storm water management and erosion control ordinance.
- Surface water and groundwater quality A longer-term secondary beneficial effect on the surface water of the Wisconsin River will be seen as residential areas along the Wisconsin River connect to the WWTF and eliminate their on-site septic systems.
- Noise, traffic and air quality impacts due to the development within the U.D. can be seen as a long-term negative impact due to urbanization of the area.
- <u>Flora and Fauna</u> over a long-term will be negatively impacted due to urbanization of the U.D. area. The District's covenants for any proposed development will require landscaping to counteract some of the loss to urbanization. There should be minimal long-term negative impact to the wildlife in the collection system area as those improvements are underground. The WWTF area will reduce the open space of the present prairie field. It has been noted that the effluent seepage cells because of the open well-treated water often draw birds and other wildlife to the WWTF area.
- <u>Disruption of Agricultural Activities</u> has been prevented by the selection of this collection/treatment alternative. This is a long-term benefit to the adjoining landowner's farming future.
- Scenic, Recreational or other Aesthetic Resources The WWTF could be seen as a long-term negative impact to the aesthetic character of the area however it is located directly adjacent to Rest Area 11 and will be considered by the passing traffic as a part of the "rest area complex". Wastewater treatment tanks will be covered. Clean effluent water discharging into the seepage cells would be viewed in a neutral fashion. The DNR lands to be utilized for rest area expansion and the WWTF are presently public hunting grounds. The open area next to the Rest Area 11 is part of a prairie restoration project by the DNR. There will be a long-term loss of prairie restoration lands at this location. The DOT and DNR will negotiate for the mitigation of this issue through a transfer of nearby lands to the

General Engineering Co., Inc. Page 5 April 19, 2005

DNR. The loss of public hunting in this particular area is seen as minimal long-term impact because most hunting was done and will continue to be done in the wooded hills away from the interstate.

b. There are no known geographically scarce resources impacted by the preferred alternative. The collection and WWTF construction areas have been previously disturbed as part of highway or interstate construction activities in the years past. This alternative has, in some sense, helped to preserve a historic farmstead (Paul Black farm) because the DOT was considering some of the Black farm for their on-site waste treatment system until the Dekorra U.D. approached them.

As noted in "a" above, there are no prime Ag lands affected by this alternative.

There are no known threatened or endangered resources impacted by this alternative, either in a short-term or long-term basis. As noted above, most of the areas have been significantly disturbed previously and this alternative plans to utilize as much of those areas as possible. Construction of a high order mechanical WWTF over a large and multiple small on-site septic systems will produce higher quality effluent and provide a better level of protection of the ground water and the surface waters of Rowan Creek and the Wisconsin River. Both of these are significant recreational resources. Rowan Creek is seen as a sensitive ecosystem.

c. The primary impacts of the collection and WWTF construction will be reversible. Most of the utility work is underground and those areas will be restored to their previous surface condition.

Ultimately, as sewer service is extended to the river and lakeshore areas we hope the previous trend of discharging inadequately treated septic system effluent into the Wisconsin River and Lake Wisconsin will be reversed. By collecting and treating the wastewater at a central WWTF, a significantly higher order of protection will be provided.

Restoration of the disturbed land around the WWTF to prairie grasses should help to reverse some of the impact of construction. Mitigation land swaps between the DOT and DNR will help to reverse the land loss issue.

The Utility District's storm water management planning efforts for new development should serve to reverse the potential negative impact by urbanization. Storm water detention and water quality management techniques required for each developed parcel will reduce the potential for damage to the nearby wetlands and Rowan Creek.

4. Significance of Cumulative Effects

The Utility District will continue to increase in size as development occurs. As this urbanization moves out from the immediate intersection area more Ag land or woodland will be converted to parking lots and buildings. In that this is a primarily rural area there will be a

General Engineering Co., Inc. Page 6 April 19, 2005

limit to how far out from the interchange development will push. We have estimated the ultimate build out to be about 920 acres. The District will work through the enforcement of its ordinances to maintain the quality of runoff from the developments to protect the area's wetlands and stream.

We are hopeful that one cumulative effect will be the expansion of public sewers in the existing developed riverside and lakeshore areas. The expansion of the sewer system to serve these areas will provide a net benefit by the elimination of hundreds of septic systems. This will cause an enlargement of the District's WWTF. More energy will be expended to better treat the wastewater.

5. Significance of Risk

a. One unknown in the development of this project is that of the type of developments that could locate to the Utility District in the future. The Utility District has prepared protective covenants and bylaws to prevent environmentally problematic businesses from locating here. The District will establish a review committee to screen potential businesses, thus reducing the risk potential.

Spills of waste material hazardous to the transfer or treatment systems are an unknown risk. It may be necessary to consider locations of manholes to reduce the risk of unauthorized dumping. The operation and maintenance manual for the WWTF will review operator options to maintain or regain treatment in such situations.

b. Failures at the main lift station or WWTF due to mechanical malfunctions, power situations, fire or vandalism could occur at any time creating a potential sewage spill situation near Rowan Creek or the wetlands adjacent to the Wisconsin River.

Duplicate pumps and equipment are provided and standby power (portable or permanent generators) will be provided for both sites. Telemetry of alarms will be provided to alert the operator of problems. Cooperative agreements can be put in place between neighboring communities for emergency assistance.

Lightning strikes, fires and unanticipated equipment failures pose the greatest risk to the mechanical and electrical systems that control sewage transport and treatment. Other hazards such as vandalism, tornadoes, unauthorized dumping or spills of hazardous materials are seen as less likely. The new rest areas will now allow RV dumping and only toilets, urinals and sinks discharge into their building sewers. The likelihood of unauthorized dumping at the rest areas in significantly reduced as a result of the DOT's research into this concern.

General Engineering Co., Inc. Page 7 April 19, 2005

6. Significance of Precedent

A decision against this proposed alternative would force the DOT to transfer its wastewater to the Village of Poynette for treatment. As a result, the Utility District would still develop but its wastewater would be transferred to Poynette as well. Directing a significant amount of wastewater to the Village's WWTF would have a long-term detrimental effect on the water quality of Rowan Creek.

A decision against this proposal would take away an opportunity from the Town of Dekorra to obtain public sewer service for the riverfront and lakeshore parcels that are presently utilizing septic systems. Removing that opportunity is seen as a detrimental effect on the water quality of the Wisconsin River and Lake Wisconsin.

A decision for this proposed alternative would eliminate the potential of the Village of Poynette annexing this interchange away from Dekorra. It would prevent the above two scenarios from occurring and is seen as a positive effect on the environment.

A decision for this proposal leaves open the future option for surface water discharge to the Wisconsin River. A surface water discharge option at this time may produce a significant backlash by Lake Wisconsin residents (Recall the Portage WWTF situation in the early 1980's). A groundwater discharge option with a future change to surface water discharge would be looked at less harshly because the case could be made the discharge has indirectly been to the Wisconsin River for several years.

If a decision was against this proposal and if the Village of Poynette determined it would not accept the rest area wastewater, large on-site septic systems would be constructed causing the taking of private, productive farmland and the discharge of a lesser quality effluent to the groundwater.

The DNR does not want to allow the DOT or Dekorra to utilize their land for either the expansion of the rest areas or construction of a joint WWTF. The DNR does not typically allow their lands to be taken or traded for use by other private or governmental agencies. I cannot speak to the ability of the DNR to prevent the DOT from expanding their rest areas into DNR owned lands. If that were possible I suspect the Dekorra Utility District would not have formed and all plans would be off.

The proposal anticipates the sewage forcemain being constructed within the interstate corridor from the Utility District to the WWTF. This is not typically allowed, however, none of the adjacent private property owners would grant easements for the forcemain to be placed on private property.

The proposed plan may force the existing Dekorra Sanitary District No. 1 to consider public sewer service sooner than that Board presently wants.

General Engineering Co., Inc. Page 8 April 19, 2005

A decision against this proposal would potentially force the District to consider other alternate WWTF sites on private property. Every property owner with a potential WWTF site was contacted previously and every property owner refused consideration. Condemnation proceedings would be required and productive agricultural lands would be taken out of service and off the tax roll. The selected alternative would be more costly to construct and operate.

7. Significance of Controversy over Environmental Effects

If the proposed alternate does not go forward and the DOT rest areas pump to Poynette, it is likely that an annexation situation may arise. The property owners in the core area of the District may seek to connect to the DOT forcemain so development of the interchange can proceed to some degree. Annexation for sewer service will become a highly controversial issue ultimately driving a deep rift between Dekorra and Poynette.

If a decision is against this proposal and an alternative site must be considered on private agricultural property there will be significant landowner opposition. Condemnation proceedings are never popular and will serve to divide the Town and cause a backlash against the DNR. Significant work has gone into the prairie restoration around the proposed WWTF site. It is not, however, seen as useful public hunting land due to its proximity to the rest area and the interstate. Area landowners have stated that their productive farmlands should not be taken while this land remains open.

The proposed plan is seen by the property owners of the Utility District as a positive step by most. Numerous meetings have been held to inform landowners of the cost implications of the development. Some property owners have shown strong opposition due to the assessment costs for their portion of the collection and treatment facilities. Even with the DOT paying 80% of the WWTF, forcemain and main lift station costs the owners realize they will pay for between 20% and 100% of the collection system to serve their parcels. Some are skeptical that the interchange will develop in a timely manner and fear they will be stuck with vacant, sewered land. Others have their residences on the parcels in the District and are not interested in developing at this time even though the land is zoned highway interchange. They feel they are being forced into paying for something they don't want. The Utility District is now separated into the "Core Area" and the periphery. The Core Area would be sewered as part of the initial construction project and the periphery areas would be sewered as development pushes out from the Core Area. This tiered plan has quelled concerns by peripheral property owners of the District.

The Town has acknowledged the environmental concern in the Tipperary Point area (Dekorra Sanitary District No. 1) and riverside areas along CTH V due to older and potentially inadequate septic systems. The Sanitary District has resisted connection to public sewers on the basis that it will change the character of the area and promote higher density development. It could also foster additional development in marginal areas. Sewer system assessments would likely force some property owner to leave for economic reasons. Property values and associated property taxes would increase and drive some long-term

General Engineering Co., Inc. Page 9 April 19, 2005

residents out. Non-resident property owners are not willing to pay for the sewer system when they only use their properties during the summer. Other full-time residents are upset that they must live with a holding tank rather than being able to have public sewers. They also are upset that they cannot develop some of their lands without public sewers. In effect, the non-residents are preventing them from having public sewers. Moving forward with this proposed alternative will open the door for the Town to address the issue of sewering the riverside and lakeshore areas. It will become a very controversial issue but one that now will have economic options.

Discharge of the wastewater to the surface waters of the Wisconsin River that leads to Lake Wisconsin from any WWTF will create significant controversy. There is historical evidence of that from the Portage WWTF project in the 1980s. Surface water discharge into the Rowan Creek would create a similar negative response by such organizations as the Friends of Rowan Creek and Trouts Unlimited. The groundwater discharge option is not as invasive physically or politically as surface water discharge.

It is understandable that the DNR is not supportive of this proposal from the standpoint of utilization of public lands to serve private development even if the ownership is by a government entity and serves the needs of another state agency facility. It is our understanding that the DOT is negotiating with the DNR for mitigation lands near this site to compensate for loss of state lands to the DOT for their expansion as well as for the WWTF site. It is our belief that the expansion of the DOT Rest Area 11 creates a significant impact on the public lands of the DNR. That new physical intrusion combined with existing impacts by the interstate highway traffic (high ambient noise and vibration levels, increased air quality issues and visual intrusion by the sheer volume of traffic in the immediate area) reduce the public access and utilization value of the WWTF area to minimal levels. We recognize there is still a flora and fauna value to this area however those also have already been negatively impacted by the interstate and the rest area.

The DNR may see a higher value to receipt of mitigation lands in exchange for the lands adjacent to the rest area. The exchange lands will certainly be in lower trafficked areas and more suitable for public access and environmental preservation.

We believe there is or will be more controversy and adverse effects by the rejection of the proposed alternative than by the acceptance of the proposal.

regarding the status of on-site septic systems in Dekorra Township. The County upgraded their ordinances in 2000 to restrict the use of holding tanks on new construction. Any newly created parcels after 2000 cannot utilize holding tanks. For the most part, the only holding tanks installed since 2000 have been for failed existing systems or systems without suitable replacement area. The attached list of Holding Tanks specifically in the Dekorra Sanitary District No. 1 and No. 2 areas adjacent to Lake Wisconsin. Fifty-one (51) holding tanks have been installed as replacements for failed or inadequate on-site septic systems in this immediate area since 1996. Tom

General Engineering Co., Inc. Page 10 April 19, 2005

Robson of the Planning and Zoning office provided the attachments to update previous information.

4) Item 18: The DOT will consider providing a gated access to the WWTF from Rest Area 11. We would respectfully request a temporary construction access road be provided off CTH V during the construction of the WWTF. Is it possible that access off CTH V can be available as an emergency backup to the rest area access?

Listing \$35,000 under each WWTF alternative was an oversight. There will be an access drive required for each alternative however the costs for each will vary. Attached are the revised PW comparison sheets for each WWTF alternative.

5) Item 19: Thank you for catching a spreadsheet summation error in attachment B2. The attached revised PW comparison sheets for each WWTF alternative depict the corrected comparison values. By adding in the Rowan Creek WWTF alternative it necessitated looking at both the collection system costs and the WWTF costs due to the different wastewater pumping scheme. The four alternatives should have added the WWTF, Tier 1 and Tier 2 capital costs for a total capital cost comparison. The "WWTF ON DNR LANDS NORTH OF REST AREA #11 (GROUNDWATER DISCHARGE)" did but the other alternates did not. The revised sheets reflect that the surface water discharge alternatives are about 36% higher in total present worth than the selected alternative.

Attachment C reflects "WWTF only" costs for the design flow of 266,000 gpd. The attachment B2 costs are for collection and treatment of a phase 1 condition of 124,000 gpd.

The surface water discharge alternatives do not include an effluent lift station as part of their cost. The scenario we recommended for surface water discharge would have the effluent outfall heading towards the west-northwest across CTH V and out to the main channel of the Wisconsin River by gravity.

If we elevate the WWTF, it may require the forcemain to extend all the way to the WWTF and force the DOT's Rest Area 11 to install a lift station for their wastewater.

No. As I noted previously, the option to run an effluent discharge line in the interstate right-of-way from the WWTF to the Wisconsin River Bridge will not work by gravity. The 4' Columbia County contour maps show the interstate ditch line south of the Wisconsin River Bridge to be at about 812 ft USGS. An effluent lift station is required in this scenario.

I adjusted the capital costs for a 10 acre site rather than the 20 acre seepage cell option site. I also reduced the amount of fencing required for the surface water discharge options. The revised cost options and total cost comparison summary is attached.

General Engineering Co., Inc. Page 11 April 19, 2005

We will coordinate with the DOT on the location of the well for the upgraded Rest Area 11. At this point it looks like the new well will be located on the south side of the proposed rest area, over 1500' away. The new well for this WWTF will be placed to meet code requirements.

If you have any questions regarding this, please contact me.

Sincerely,

GENERAL ENGINEERING COMPANY, INC.

Jerry A. Foellmi Registered Professional Engineer

JAF/jaf

Enclosures

Cc: George Osipoff, DNR

Pat Kaiser, DNR
Dave Simon, DOT

Dekorra Town Board

Tim Astfalk, Mead and Hunt

Ron Grasshoff, DNR Sue Finstad, Clerk Fred Teitgen, Chairman

Rusty Chesmore, Mead and Hunt

ENVIRONMENTAL ASSESSMENT PRESENT WORTH ANALYSIS SUMMARY

Γ	ALTERNATIVE	CAF	PITAL COST	O.N	I&R COSTS	PRE	TOTAL SENT WORTH
1	WWTF on DNR Lands North of Rest Area #11 (Groundwater Discharge)	\$	3,707,000	\$	80,600	\$	4,983,000
2	. WWTF On DNR Lands North of Rest Area #11 (Surface Water Discharge)	\$	5,331,000	\$	113,400	\$	7,092,000
3	WWTF On DNR Lands South of Rest Area #11 (Surface Water Discharge)	\$	5,324,000	\$	113,300	\$	7,083,000
1 2	WWTF at CTH J Adjacent to Rowan Creek (Surface Water Discharge)	\$	5,035,000	\$	116,100	\$	6,761,000

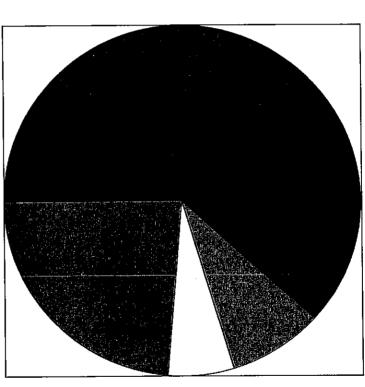
WWTF ON DNR LANDS NORTH OF REST AREA #11 (GROUNDWATER DISCHARGE) Dekorra Utility District No. 1 Phase 1 Construction (124,000 gpd)

tem		Capital Cost	Design Life			eplac∈ Cost	1,	Salva Valu	
ier 1 Collection System Sewers & Forcemain	\$	1,211,000	40					\$	605,500
Lift Station		172,000	20					•	
ier 2 Collection System Sewers	\$	510,000	40					\$	255,000
Lift Station		510,000	20					•	
VWTF Land Purchase		40,000	40					\$	20,000
	Perio	Bulley Marie Landson						•	
Site Preparation	Er.	9,200	40 -					\$	4,600
Clearing and Grubbing	\$		40					\$	43,000
Excavation, Backfilling and Compaction	\$	86,000						\$·	3,267
Gravel Road Construction	\$32	9,800	30					Φ.	-
Nastewater Treatment Facility									
Service Building									
Concrete	\$	75,500	40					\$	37,750
Service Building	\$	136,000	30					\$	45,333
Flow Meters (5)	\$	27,500	15 -	,	\$		27,500	\$	18,333
Samplers (2)	\$	11,000	15		\$		11,000	\$	7,333
Mechanical Bar Screen	\$	69,000	20					1.4	
	\$	24,000	15		\$		24,000	S	16,000
WAS Pumps		•			Ψ		24,000	•	10,000
Standby Generator	_ \$	39,600	20		Lpr			. <u>.</u>	
SBR				,					400.000
Concrete	- 5	205,900	40					\$	102,950
Control and Aeration Equipment	\$	144,000	20					1.04	
Blowers (2)	Š.	14,400	15		\$		14,400	\$	9,600
Seepage Cells	<u>.</u>								
Seepage Cell Grading	- _{\$}	12,200	40			B 12 . 16		\$	6,100
· ·			40		*			\$	3,100
Rip-Rap Interior Berms	40	6,200						*	0,100
Monitoring Wells (3)	Φ.	9,000	20						75
Piping	_ \$ *	1,500	40					\$ 4	750
Aerobic Sludge Holding Tank	7 4								
Concrete	- 5	-	4 0					\$ % PE	-
Aeration System	\$	-	20						-
Sludge Pumps and Controls	\$**	-	15		\$		-	\$	
Fiberglass Cover	\$ 50	-	20:						
	705774118	8,000	20						1.0
Fencing	the statement of	39,000	20					V 1. PORTS	
Miscellaneous Metals (5% WWTF Cost:)	\$							5-	20,50
Yard Piping (5% WWTF Cost)	5	41,000	40						20,00
New 3 Phase Electrical Service	\$	20,000	20					Easts Sec.	
Electrical (15%)	\$	148,000	20.						
Restoration	5	53,300	20						10.3
Mob./Demob., Bonding/ins.	\$ ·	85,000	20					5	
Subtotal	5	1,315,000			\$		76,900	\$	1,199,10
Capital Contingencies (15%)	5.	197,000						Single participation	
	\$	1,512,000							
Subtotal	S							95.0	
Engr., Insp., Admin. (20%)	_ -	302,000							
Total WWTF Capital Cos		1,814,000	Þ	121	**	*****			
Total Tier 1 Capital Cos	it \$	1,383,000	4	47	6.00		3		
Total Tier 2 Capital Cos	t \$	510,000			+ 9%			•	
•									
Operation and Maintenance Costs							1.56	Annual Cost	
Administration & Insurance	-	<u></u>						\$	5,00
Labor: 20 hours/week x 52 weeks/year x \$20.00/hour =					. 1/2/ ₁₀		100	\$ -5.5	20,80
4									
Electrical:								_	- ·
							-	\$	10,40
SBR Equipment							ر	.\$	1,30
SBR Equipment Lift Station & WAS Pumping							-	\$ _	3.70
Lift Station & WAS Pumping								_	8,00
Lift Station & WAS Pumping Mixers and Miscellaneous								\$	
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing	e Coete								6.90
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structur		are)			va:			5	
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cos		ars)		1.	Anti-			5 . Ng 5 . Ng	16,80
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cos		ars)	· -		Male.		1	5. 42. 5.7% (r. 5.6% (r.	16,80 7,70
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost		us)	-		Ant.	· ·		5 . Ng 5 . Ng	16,80 7,70
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal:		ars)						\$	16,80 7,70
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal: 20 Year Present Worth	ts / 20 yea	ars)	-		Actual	· ·		\$	16,80 7,70
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal: 20 Year Present Worth Note: Present Worth estimated using discount rate = 6-3	ts / 20 yea	ars)			Actual Cost		3 707 000	\$ \$ \$ Present Worth	16,80 7,70 80,61
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal: 20 Year Present Worth Note: Present Worth estimated using discount rate = 6-5 Initial Capital Cost	ts / 20 yea				Actual Cost		3,707,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	16,80 7,70 80,80
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal: 20 Year Present Worth Note: Present Worth estimated using discount rate = 6-5 Initial Capital Cost	ts / 20 yea	11.1288	-		Actual Cost \$		3,707,000 80,600	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	16,80 7,70 80,80
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal: 20 Year Present Worth Note: Present Worth estimated using discount rate = 6-3	ts / 20 yea		-	-	Actual Cost \$ \$		80,600	S S Present Worth S S	3,707,01
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal: 20 Year Present Worth Note: Present Worth estimated using discount rate = 6-3 Initial Capital Cost Annual 0 & M Cost Future Capital - 10 Year	ts / 20 yea	11.1288	-	-	Actual Cost \$	· · · · · · · · · · · · · · · · · · ·	80,600 76,900	Present Worth	3,707,01 896,91 30,44
Lift Station & WAS Pumping Mixers and Miscellaneous Laboratory Testing System Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Cost Contract for Sludge Hauling and Disposal: 20 Year Present Worth Note: Present Worth estimated using discount rate = 6-3 Initial Capital Cost Annual O & M Cost	ts / 20 yea	11.1288 0.5390	-	-	Actual Cost \$ \$	· · · · · · · · · · · · · · · · · · ·	80,600	Present Worth	6,90 16,80 7,70 80,60 3,707,00 896,9 - 30,44 348,30

WWTF ON DNR LANDS SOUTH OF REST AREA #11 (SURFACE WATER DISCHARGE) Dekorra Utility District No. 1 Phase 1 Construction (124,000 gpd)

pital Costs	Capital Cost	Design Life	Replat Cost		Salvage Value	3
M Levels & Largeman	1,211,000	40		. 5		605,500
er 1 Collection System Sewers & Forcemain \$	172,000	20				
Lift Station \$		40		\$		255,000
er 2 Collection System Sewers \$	510,000	20		*		
Lift Station \$	-	<u> 20</u> 40	<u></u>	s		10,000
and Purchase	20,000	40 -		*		,
te Preparation		40		s		4,600
Clearing and Grubbing \$	9,200	40		Ψ	*	43,000
Excavation, Backfilling and Compaction 5	86,000	40		Ð	1000	
Gravel Road Construction	5,600	30		Ş	**	1,867
astewater Treatment Facility	Completed Marine Control Secretical		. •			,i.,
					10.00	
ervice Building	75,500	40		\$	****	37,750
Concrete \$	136,000	30		\$		45,333
Service Building		15	\$	27,500 \$		18,333
Flow Meters (5)	27,500			11,000 \$		7,333
Samplers (2)	11,000	15	\$	11,000 Ф		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Mechanical Bar Screen \$	69,000	20			10	40.000
VAS Pumps 5	24,000	15	\$	24,000 \$	i .	16,000
vao i unipa	39,600	20				
Stelleby Schelater	,					
BR	205,900	40	the sequential section of the sectio		\$ - 5	102,950
Concrete \$		20				
Control and Aeration Equipment \$	144,000		\$	14,400		9.60
Blowers (3)	14,400		Φ	177,7100 4	r Frank	0,00
SBR Pole Building (70*80)\$	-	20			e de la compania del compania del compania de la compania del compania de la compania de la compania del compania de la compania de la compania de la compania del compania	
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	-	40		2	5	
COILLIERE	_	20				
Uettrani o Astoiri	a	15	\$:	5 , e	
Sludge Pumps and Controls \$	-	20	Ψ		The second second	
Fiberglass Cover \$	· -			the second	100	27
hemical Feed System \$	25,000	20				- 1- 1-
IV Disinfection \$	54,000	20 🐇			F. 6	
Cascade Aerator 5	10,000	20			2.54	
Ascade Actatol	820,000	40 '		:	\$	410,00
Dutfall Sewer \$	5.000	20.				
Fending Earlies Earlie		20			116. July	, al
discellaneous Metals (5% WWTF Cost) \$	83,000				\$	43,50
/ard Piping (5% WWTF Cost)	87,000	40				
New 3 Phase Electrical Service \$.	÷ 20,000	20 🗄		23.54.5	0.008.00	• 9
Electrical (15%)	293,000	20				
	53,300	20				1, 10,0
Restoration \$,	168,000	20			(9-13 ³) . 11	
MOD/ Del IIDE: Delidingrifie:	2,486,000	5:	5	76,900	\$	1,610,8
Subtotal			*	•	10 All	
Capital Contingencies (15%) \$	373,000	,			may 14th	
Subtotal	2,859,000					
Engr., Insp., Admin. (20%)	572,000				N. S.	
Total WWTF Capital Cost \$	3,431,000	į.	18 miles (1848) 1844	unity is		
Total Tier 1 Capital Cost \$	1,383,000		$z = e^{-i\beta H_{2}}$ (2)	9 .		
Total Tier 2 Capital Cost \$	510,000	į.	Secretary,			
Iotal Her & Capital Cost \$	010,000					
					Annual Cost	
Operation and Maintenance Costs					5	5,0
Administration & Insurance						31,2
_abor: 30 hours/week x 52 weeks/year x \$20.00/hour =			177 A.		\$ 52.00	ع, ۱ ت
					*	
Ci-dried.						
Electrical:					\$	10,4
SBR Equipment					5	1,3
Lift Station & WAS Pumping					\$	3,7
Mixers and Miscellaneous				•	•	8,0
Laboratory Testing						15,7
Plant Maintenance @ 1% of Equip. + 0.5% of Structure Costs	5			t - 1	5	-
Equipment Replacement Fund (20% of Costruction Costs / 2	20 years)	4	Comment of the second	14 m	° ≨ akora magad	
Contract for Sludge Hauling and Disposal:			1	10 1 10 1 10 10 10 10 10 10 10 10 10 10	\$ 16 jan an	7,7
Contract for Studge Hauting and Disposer.					\$	113,
•						
			Actual		Present	
20 Year Present Worth			Cost		Worth	
Note: Present Worth estimated using discount rate = 6-3/8%	l .			5,324,000	\$	5,324,
Initial Capital Cost			\$			1,260,
Annual O & M Cost	11.1288		\$	113,300	\$	ارلالانكر ا
Future Capital - 10 Year	0.5390)	\$		\$	
· · · · •	0.3957		\$	76,900		30,
Future Capital - 15 Year	0.2905		\$	1,610,800	\$	468,
Salvage Value	0,2000					
OBIVE GC VOICE					\$	7,083,

HOLDING TANKS (Through 2004) (Top Five Townships)



■ West Point ■ Caledonia

I Dekorra

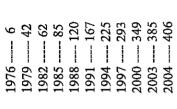
□ Lewiston

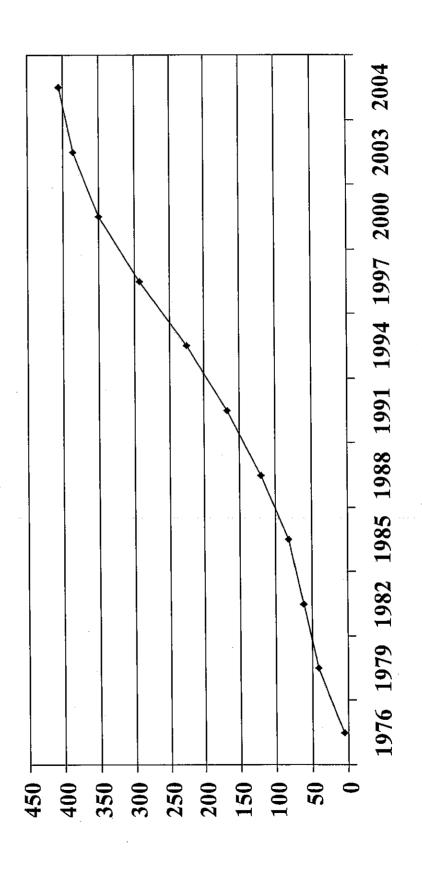
Pacific

Others

Dekorra ---- 164 West Point -- 43 Caledonia --- -43 Pacific ----- 35 Lewiston ---- 25 Others ---

HOLDING TANKS (1976-2004)





Second Se



FACILITIES PLANNING REPORT

STEP 1 WASTEWATER COLLECTION & TREATMENT FACILITIES

for

TOWN OF DEKORRA Utility District

Columbia County, Wisconsin

June, 2004



Prepared by:

GENERAL ENGINEERING CO., INC.

412 E. Slifer Street P.O. Box 340 Portage, WI 53901 Phone: (608) 742-2169 GEC No. 1297-89 Owner:

TOWN OF DEKORRA

Fred Teitgen, President Sue Finstad, Clerk 106 South Main St. Poynette, WI 53955 608/635-2014

FACILITIES PLANNING REPORT STEP 1

WASTEWATER COLLECTION & TREATMENT FACILITIES TOWN OF DEKORRA UTILITY DISTRICT

TABLE OF CONTENTS

<u>Des</u>	<u>cription</u>	<u>Page</u>
1.0	SUMMARY AND RECOMMENDATIONS	1-2
2.0	INTRODUCTION 2.1 Purpose and scope 2.2 Abbreviations 2.3 Definitions 2.4 General 2.5 Project History	3 3-4 4-8 8 8-10
3.0	ASSESSMENT OF CURRENT SITUATION 3.1 Planning Area Description 3.2 Population Estimates 3.3 Planning Period 3.4 Existing Environmental Conditions of Planning Area 3.4.1 Geography and Topography 3.4.2 Geology and Hydrology 3.4.3 Soils 3.4.4 Climate 3.5 Rest Area Wastewater Flows and Loading 3.6 Estimated Flows and Loading from Interchange Area	10-12 13 14 14-16 17 17 17-19 20-22 22
4.0	ASSESSMENT OF THE FUTURE SITUATION 4.1 Planning Period 4.2 Land Use	23 23-24 24 24 24-27 27-28 29 29 30
5.0	DEVELOPMENT AND EVALUATION OF ALTERNATIVES 5.1 No Action Alternative 5.2 Regional Solution 5.3 Alternative WWTP Sites 5.4 Collection System Consideration 5.5 Alternative Wastewater Treatment Systems 5.5.1 Preliminary Screening of Alternative Waste Treatment Processes Considered 5.5.2 Summary of Alternatives for Effluent Disposal 5.5.3 Alternatives for Advanced Treatment 5.5.4 Alternatives for Disinfection Techniques 5.5.5 Alternatives for Sludge Handling	31 31-32 33-35 35-36 37-40 40 40-43 43-44

	5.5.6 Summary 5.6 Detailed Analyses of Feasible Alternatives	44-45
	5.6.1 General Discussion and Assumptions	45
	5.6.2 Oxidation Ditch at Site A with Surface Discharge of the Wisconsin River	46
	5.6.3 SBR at Site A with Surface Discharge to the Wisconsin River	46
	5.6.4 Oxidation Ditch at Site A with Land Disposal at Site A	46-47
	5.6.5 SBR at Site A with Land Disposal at Site A	47
	5.6.6 General Discussion and Assumptions for Cost Effective Analysis	47-52
	5.6.7 Summary of Cost Effective Analysis	52
	5.7 Non Monetary Differences of Feasible Alternatives	52
	5.7.1 Operation	53
	5.7.2 WPDES Permit Requirements	53
	5.7.3 Mechanical Reliability	53-54
	5.7.4 Ease of Expansion	54
	5.7.5 Implementability	54
	·	
6.0	EVALUATION OF ENVIRONMENTAL EFFECTS OF FEASIBLE ALTERNA 6.1 Major Impacts	ATIVES
	6.1.1 Resource Commitment	55
	6.1.2 Physical Changes and Environmental Changes	55
	6.1.3 Archaeological, Cultural, Endangered Resources, and	55
	Historic Changes	
	6.1.4 Violations	56 -
	6.1.5 Human Use of Land	56
	6.1.6 Operation and Maintenance	56
	6.2 Unavoidable Adverse Impacts	•
	6.2.1 Aesthetics	56
	6.2.2 Future Expansion	56
	6.2.3 Noise and Air Pollution	56-57
	6.3 Short Term and Long Term Effects	
	6.3.1 Economic Effects	57
	6.3.2 Environmental Effects	57
	6.3.3 Irreversible and Irretrievable Commitment of Resources	57
7.0	PLAN SELECTION	
	7.1 Recommendations	58
	7.2 Phased Construction Sequence	58-59
	7.3 Economic Impact of the Selected Phased Alternative	59-60
	7.4 Preliminary Design of Treatment Works	60-61
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
8.0	PROJECT IMPLEMENTATION	
	8.1 Project Scheduling	61
	8.2 Public Participation	61-64
	8.3 Recommended Action	64
	8.4 Environmental Impacts of the Proposed Action	
	8.4.1 Water	64
	8.4.2 Air	64
	8.4.3 Land	64-65
	8.4.4 Socio-Economic Effects	65
	8.5 Remedial, Protective, and Mitigative Measures	
	8.5.1 Aesthetics	65
	8.5.2 Construction	65
	8.6 Unavoidable Adverse Effects	65-66
	8.7 Relationship Between Local Short-Term Uses of Man's Environment	66
	and Maintenance, and Enhancement of Long-Term Productivity	

			a monto commente de la commenta del commenta de la commenta del commenta de la commenta del commenta de la commenta del commenta de la commenta del comm	66 67
TABL	ES, FIGURE	ES, AN	DEXHIBITS	
	Table 3-1 Figure 3-1 Exhibit 3-1 Exhibit 3-2	1998! 2003! Town Town Initial: 20 Yei Groun Soils! Rest A	Dekorra Utility District No. 1 Boundary Map Dekorra Utility District No. 1 Boundary Map of Dekorra Population Projections of Dekorra Population Projections Service Area ar and Ultimate Service Area dwater Contour Map	2 11 12 13 15 16 18 19 21 22
	Table 3-4 Table 3-5	Rest A Prese Initial	Area Wastewater Strength nt Day Approximate Utility District Flows Interim Combined Rest Area and Utility District pated Flows	22 22
	Table 4-1 Table 4-2 Table 4-3 Table 4-4 Table 4-5 Exhibit 5-1 Table 5-1	Dekor Total I Service Desig Efflue Altern Tier 1	ra/Lodi Township Population Comparison Holding Tanks in Dekorra Township he Area and Summer Flow Estimates in Summer Flows and Loadings int Limits Recommended by the Wisconsin DNR hative Effluent Discharge Locations Map & Tier 2 Sewage Collection System Costs	25 26 27 28 30 34 36
	Figure 5-1 Figure 5-2 Table 5-2	Seque Oxida	tion Ditch Process encing Batch Reactor (SBR) Process tion Ditch at Site A with Surface Discharge to the	41 42 48
	Table 5-3 Table 5-4 Table 5-5 Table 5-6 Table 7-1 Table 7-2 Table 8-1 Table 7-3 Figure 7-1	SBR a Oxida SBR v Cost I User Prelin Project Phase	onsin River at Site A with Surface Discharge to the Wisconsin River at Site A with Surface Discharge to the Wisconsin River at Site A with Land Disposal at Site A with Land Disposal at Site A Effectiveness Summary Charge Estimate Summary aninary Design of Treatment Works Parameters at Scheduling at 1 Cost Analysis SBR with Land Disposal at Site A at 1 Project Site Layout SBR with Land Disposal at Site A	49 50 51 52 59 60 61 62 63
APPE	NDICES			
	Appendix A Appendix A Appendix A Appendix A Appendix A	\-2 \-3 \-4	Agreement for Sanitary Sewer Service, DOT/Dekorra U.I DNR Draft Effluent Limits Study Mead & Hunt Site Evaluation Report Excerpts Archaeological, Cultural and Historical Site Review Public Hearing Information	D. #1

1.0 SUMMARY AND RECOMMENDATIONS -- ABSTRACT

The facilities planning stage, also referred to as Step 1, is the first step in a three-step process required to complete wastewater treatment facilities with Clean Water Funding and associated funding sources. This document details the existing environmental conditions and demonstrates the need to consider various collection and treatment systems. A review of several sewage collection and wastewater treatment scenarios is included.

One of the primary decisions in the selection process was whether sewage would be collected and transferred to an existing regional wastewater treatment facility or dealt with as a "local" option by Dekorra Utility District No. 1. The choice based on both economic and other factors was to collect and treat the "local area" wastewater locally. The potential for future expansion of the WWTF due to the future connectivity of the area's sewer serviceable areas makes the selected option the only long-term option available. A detailed cost breakdown is provided and that base sewage collection cost is included with the various treatment options. It is important to note the future expansion of the collection system will be borne by the property owners connecting on to the system at that time. The base collection system for the Utility District is the issue considered herein.

A detailed cost-effectiveness analysis and an environmental evaluation have been made of three of the most feasible wastewater treatment alternatives. They are summarized in Table 1-1. The four alternatives examined are as follows:

- 1. Oxidation Ditch Facility w/Wisconsin River Discharge of Effluent
- 2. Oxidation Ditch Facility w/Land Disposal of Effluent
- 3. Sequencing Batch Reactor w/ Wisconsin River Discharge of Effluent
- 4. Sequencing Batch Reactor w/Land Disposal of Effluent

The sequencing Batch reactor (SBR) facility showed to be the lowest present worth and initial capital cost of the four alternatives. This system is more complex to operate and maintain than the other options and requires the use of programmable controllers to simplify its day-to-day operation. SBRs are not used widely in Wisconsin although they are gaining acceptance. There are no significant adverse environmental effects with this alternative.

In terms of capital costs and total present worth costs from the DNR prospective, the 2nd alternative (Oxidation Ditch) is within 10% of the lowest cost alternative and therefore either of

the two would be considered acceptable. Considering all aspects of monetary, use of existing facilities and non-monetary issues it is recommended that the proposed new treatment facility described herein as Alternative (Sequencing Batch Reactor Facility w/Land Disposal of Effluent) be constructed at the existing DNR owned site in the Town of Dekorra in Columbia County. This land is being review for purchase by the Town.

Table 1-1

COST EFFECTIVENESS SUMMARY

Alternative	Capital Cost	O & M Costs	Total Present Worth
1. Oxidation Ditch - Wisconsin River	\$4,413,000	\$125,200	\$5,975,000
2. Oxidation Ditch - Seepage Cells	\$2,638,000	\$108,800	\$3,969,000
3. SBR - Wisconsin River	\$4,063,000	\$117,000	\$5,627,000
4. SBR – Seepage Cells	\$2,383,000	\$96,600	\$3,572,000

2.0 INTRODUCTION

2.1 Purpose and Scope

The purpose of this Facilities Planning document is to study and evaluate alternate wastewater management techniques and to provide for the application of the best practical wastewater collection and treatment technologies. The scope of this facility plan is as follows:

- A. Describe the planning area and provide background information on geology, topography, hydrology, and ecology.
- B. Evaluate the future design conditions, including projected service area, population, as well as wastewater flows and loadings.
- C. Study and evaluate alternative methods of wastewater collection and treatment with respect to their environmental and economic impact.
- D. Present the design concept of each alternative along with estimated costs of constructing, operating, and financing the recommended alternative.
- E. Recommend the plan that will provide for the application of the most cost effective and environmentally sound plan for wastewater collection, treatment and disposal.
- F. Qualify for financial assistance.

2.2 Abbreviations

The following is a list of abbreviations found in the Facilities Plan:

BOD	-	Biochemical Oxygen Demand
DNR	-	Wisconsin Department of Natural Resources
EPA	-	U.S. Environmental Protection Agency
0 D. I		0 • 1

GPM - gallons per minute

| & | I - Infiltration/Inflow

MGD - million gallons per day

mg/l - milligrams per liter

RSF - Recirculating Sand Filter

POTW		Publicly Owned Treatment Works
POWTS	-	Privately Owned Waste Treatment System
WWTF	•	Wastewater Treatment Facility
CDD	_	Sequencing Batch Reactor

SBR - Sequencing Batch Reactor
SCS - Soil Conservation Service

TSS - Total Suspended Solids

SSES - Sewer System Evaluation Survey

WPDES - Wisconsin Pollutant Discharge Elimination System

2.3 Definitions

Best Practicable Technology (BPT) For industry, a level of waste treatment which represents the average of the best existing performance by well operated plants. For municipal treatment plants, secondary waste treatment except on receiving waters where the particular circumstances demand more advanced treatment.

<u>Biochemical Oxygen Demand (BOD)</u> Measure of the amount of dissolved oxygen required by organisms for the aerobic breakdown of organic matter present in water. Large amount of organic waste use up large amounts of dissolved oxygen. Thus, the greater the degree of pollution, the greater the BOD.

<u>Cost-Effectiveness</u> In a broad sense, refers to how effectively a wastewater treatment project eliminates water pollution by weighing alternative actions (monetary costs, environmental impacts, social concerns, and political consideration). In a more limited use, cost effectiveness refers only to monetary consideration.

<u>Effluent</u> Wastewater or other liquid (raw, partially, or completely treated) flowing from a treatment process or plant.

<u>Effluent Limitation</u> A restriction on the quantity, rate and concentration of wastewater discharged from industrial and municipal treatment plants.

<u>Facilities Plan</u> A plan developed by a municipality to design and construct wastewater collection and/or treatment facilities. The plan must include the specified area to be served, a collection system analysis, cost-effectiveness studies, and environmental assessment.

<u>Coliform Bacteria</u> Coliform bacteria are used to indicate the presence of other bacteria which are harmful to human health. The number of coliform bacteria present is of particular interest in water to be used for drinking.

<u>Dissolved Oxygen (DO)</u> The oxygen dissolved in water or sewage. Adequately dissolved oxygen is necessary for life of fish and other aquatic organisms and for the prevention of offensive odors. Low dissolved oxygen concentrations generally are due to discharging excessive organic solids with high BOD< the result of inadequate waste treatment.

<u>Excessive Infiltration/Inflow</u> The quantities of infiltration/inflow which can be economically eliminated from a sewer system by rehabilitation, as determined by a cost-effectiveness analysis that compares the cost for correcting the infiltration/inflow conditions with the total costs for transportation and treatment of the infiltration/inflow.

<u>Fish and Aquatic Life Standard</u> Water quality standard which says that a minimum of dissolved oxygen and temperature must be maintained so that fish and other aquatic life are not stressed.

<u>Flood Plain</u> The flood plain is the land which has been or may be hereafter covered by flood water during the regional flood. The flood plain includes the floodway and the flood fringe.

<u>Freeboard</u> Freeboard is a factor of safety usually expressed in terms of a certain amount of feet above a calculated flood level. Freeboard compensates for the many unknown factors that contribute to flood heights greater than the height calculated. These unknown factors include, but are not limited to, ice jams, debris accumulation, wave action, obstruction of bridge openings and floodways, the effects of urbanization on the hydrology of the watershed, loss of flood storage areas due to development and aggradation of the river or stream bed.

<u>Infiltration</u> The water entering a sewer system, including service connections, from the ground through such means as, but not limited to, defective pipes, pipe joints, connections, or manhole walls. Infiltration does not include and is distinguished from inflow.

<u>Infiltration/Inflow Analysis</u> A study to demonstrate the nonexistence or possible existence of excessive infiltration/inflow in the sewer system tributary to the treatment works.

Inflow The water discharged into a sewer system, including service connections from

such sources as, but not limited to, roof leaders, cellar yard, and area drains, foundation drains, cooling water discharge drains from springs and swampy areas, manhole covers, cross connections from storm sewers and combined sewers, catch basins, storm waters, surface runoff, street wash waters, or drainage. It does not include and is distinguished from infiltration.

<u>Interceptor Sewers</u> Sewers used to collect the flows from main and trunk sewers and carry them to a central point for treatment and discharge.

Outfall The mount of a sewer, drain, or conduit where an effluent is discharged into receiving waters; where a sewage pipe ends and the receiving water begins.

<u>Permit</u> A legally-binding document issued by a state or Federal permit agency to the owner or manager of a point source discharge. The permit document contains a compliance schedule requiring the permit holder to achieve a specified standard or limitation (by constructing treatment facilities or modifying plant processes) by a specified date. Permit documents also specify monitoring and reporting requirements to be conducted by the applicant. All permits issued are valid for a maximum of five years.

Parts per million (ppm) The unit commonly used to represent the degree of small pollutant concentrations and equivalent to milligrams per liter (mg/l). Larger concentrations are given in percentages.

Present Worth The total present worth method of evaluated sewage treatment systems involves bringing all costs of building, operating and maintaining the sewage treatment systems over a twenty year period to a total present worth in accordance with EPA guidelines. In the past, all costs were made on the basis of current market prices with no provision for inflation. It was assumed that all costs would have the same inflation rate and, therefore, the relative comparison of alternatives would not be affected by inflation. EPA now allows the use of inflation factors for energy costs and in so doing, the alternatives that are less energy intensive are promoted. Energy cost escalation factors for electric and LP gas have been used in accordance with the EPA guidelines.

<u>Primary Treatment</u> The first stage in wastewater treatment in which substantially all floating or settleable solids are mechanically removed by screening and sedimentation.

Regional Flood the regional flood is a flood determined to be representative of large

floods known to have generally occurred in Wisconsin and which may be expected to occur in the Fall River area. The flood frequency of the regional flood is once in every 100 years. This means that in any given year, there is a 1% chance that the regional flood may occur.

<u>Secondary Treatment</u> Wastewater treatment beyond the primary stage in which bacteria consume the organic parts of the wastes. This biochemical action is accomplished by use of various processes as the activated sludge process. Effective secondary treatment removes virtually all floating and settleable solids and approximately 90 percent of both BOD and suspended solids. Customarily, disinfection by chlorination is the final stage of the secondary treatment process.

<u>Sewerage</u> The entire system of sewage collection, treatment and disposal. Also applies to all effluent carried by sewers whether it is sanitary sewage, industrial wastes or storm water run-off.

<u>Sewer System Evaluation Survey - SSES</u> A systematic examination of the sewer system to determine the specific location, estimated flow rate, method of rehabilitation, and cost of rehabilitation versus cost of transportation and treatment for each defined source of infiltration/inflow.

<u>Sludge</u> The solids removed from sewage during wastewater treatment. Sludge disposal is then handled by incineration, dumping, or burial.

<u>Suspended Solids</u> Suspended solids shall mean those solids that either float to the surface of or are suspended in water sewage, or industrial waste which are removable by a laboratory filtration device.

<u>Tertiary Treatment</u> Wastewater treatment beyond the secondary or biological stage that included removal of nutrients such as phosphorus and nitrogen and a high percentage of suspended solids. Tertiary treatment, also know as advanced waste treatment, produces a high quality effluent.

<u>Wastewater</u> Water carrying wastes from homes, businesses, and industries that is a mixture of water and dissolved or suspended solids.

Water Quality Standard A plan for water quality management containing four major

elements; The use (recreation, drinking water, fish and wildlife propagation, industrial or agricultural) to be made of the water; criteria to protect those uses; implementation plans (for needed industrial-municipal waste treatment improvements) and enforcement plans, and an anti-degradation statement to protect existing high quality waters.

2.4 General

The Town of Dekorra and their recently formed Utility District (U.D. #1) is currently engaged in an effort to provide for a sanitary sewerage collection system and potentially wastewater treatment facilities (WWTF) to serve the developing interchange area at 190-94 and CTH CS (see Exhibit 2-2). It is always difficult to make the leap to spend significant dollars on sewerage collection and treatment to serve an unsewered area that has limited existing development. Dekorra U.D. #1's situation is somewhat unique since there is the opportunity to include the significant wastewater flows from the Department of Transportation's Rest Areas 11 and 12 along 190-94 at this time.

Several existing commercial businesses in the interchange area have either holding tanks or septic tank systems that have operational problems. Sewer service in this area would allow commercial and industrial development in the Utility District without the environmental and land use objections from large on-site systems discharging to ground water or the high maintenance costs associated with holding tanks.

The project may qualify for a variety of subsidized loan programs, including Farmers Home Administration, the Clean Water Fund, or State Trust Funds.

2.5 Project History

The Town of Dekorra has been looking at the potential for developing utilities service for the CTH CS/I90-94 interchange corridor area for a number of years. A key step in providing this service was the formation of a Utility District on April 14, 1998 which defined the initial boundaries of the service area (See Exhibit 2-1). The Utility District boundaries being considered for modification (see Exhibit 2-2) to incorporate a larger U. D. service area that would receive service in the future and would expand the assessable acreage in a multi-tiered approach. With this information we were able to determine the scope of the project and prepare cost estimates for providing sewer and water service to the district users. (It was later determined that municipal water service would not be considered further due to cost

constraints). Preliminary sewer service charges were prepared to allow the property owners within the district to consider if the project should be pursued further. The concensus at this point is to continue on with the collection and treatment of the District's and area's wastewater.

Gradual development has occurred in this area in the past - most notably, the McDonald's and Subway fast food restaurants and the McDonald's management/training center. There continues to be inquiries each year regarding the sale and developability of the interchange area lands. The issue of utilities service (sewer and possibly water service) usually causes the interested party to lose interest. The Town of Dekorra had looked at developing a Sanitary/Utility District for this area for a number of years. The cost to develop, construct, operate, and maintain a Utility District with sewer service and/or water supply, considering the present type and number of users, was not perceived as cost effective.

The 1993 Poynette WWTF facilities plan and its 1994 amendment considered the transfer and treatment of up to 50,000 gpd of wastewater generated from the interchange area. This was primarily due to the potential for development a strip mall and motel complex that fell through. The Village had concerns regarding the use of their future capacity by an entity outside their corporate limits, in particular where this area could see significant growth beyond the 50,000 gpd allowed by Poynette's facilities plan. Dekorra on the other hand, had concerns that by allowing wastewater to be transferred to Poynette it was allowing annexation to be the Village's logical next step as this area developed. The Town was not interested in this scenario.

The Department of Transportation (DOT) is intending to upgrade the two Rest Areas just north of this interchange (#11 and #12). The on-site septic systems for these Rest Areas are presently within their capacity limits but the future expansion work would create one of the largest on-site systems in the state and the DOT was concerned. These two facilities are the busiest in the State and the present facilities are already 20 years old. The DOT is looking forward to a design year of 2027 for estimating the rest areas' sizes as well as wastewater flows. They anticipate a 58% increase in average daily traffic (ADT) between 2001 and 2027. The DOT's plan is to upgrade rest area 11 (west side) in 2007 and rest area 12 (east side) in 2008. If there are no other options available the DOT would pursue on-site land treatment but it would have required the purchase of additional private farmlands. The neighboring property owners are not receptive to the taking of additional lands by the DOT.

The DOT's project is presently in the design phase. For the past several years the Utility District has been in negotiation with the DOT regarding cooperative agreements for

collection and treatment of the rest areas' wastewater. In 1997 the average summer wastewater flows from the Rest Areas were peaking at about 30,000 gallons per day, with future (year 2027) design peaks estimated at 80,000 gpd. Dave Simon of the DOT has noted his strong preference to either pump their wastewater to Poynette for treatment or work with the Dekorra Utility District on a joint wastewater management solution. The DOT prefers <u>not</u> to be in the business of operating wastewater treatment plants.

The Dekorra Utility District has looked at the DOT's planning work as an opportunity to develop a wastewater collection and treatment system for the interchange corridor area. The DOT's Rest Areas would be a major user of the U.D.'s collection and treatment system. They would be a significant revenue source to assist in financing the construction of the project as well as a significant user of the system to help defray operation and maintenance costs during the District's early years when there are fewer Utility District members. Calculations will be made to determine if this to be a cost-effective way for the Township to provide utility service to the interchange corridor area and potentially a means for the Town to provide municipal sewerage service to existing developed property along the Wisconsin River corridor as well.

3.0 ASSESSMENT OF CURRENT SITUATION

3.1 Planning Area Description

The initial service area would include the a portion of the present boundary of the Utility District No. 1 at the CTH CS/I90-94 interchange area as well as Rest Areas #11 and #12 along the interstate to the north (see Exhibit 3-1). The 20-year design service area would include the remaining portions of the Utility District as well as residential acreage on CTH V near the new wastewater treatment plant due to the proximity to the treatment faciliteis. The ultimate planned area will contemplate additional acreage around the Utility District. We also anticipate expansion of the service area along the river (CTH V) plus Dekorra Sanitary District #1 which encompasses the Tipperary Point area. The 20-year and ultimate service areas are included as Exhibit 3-2.

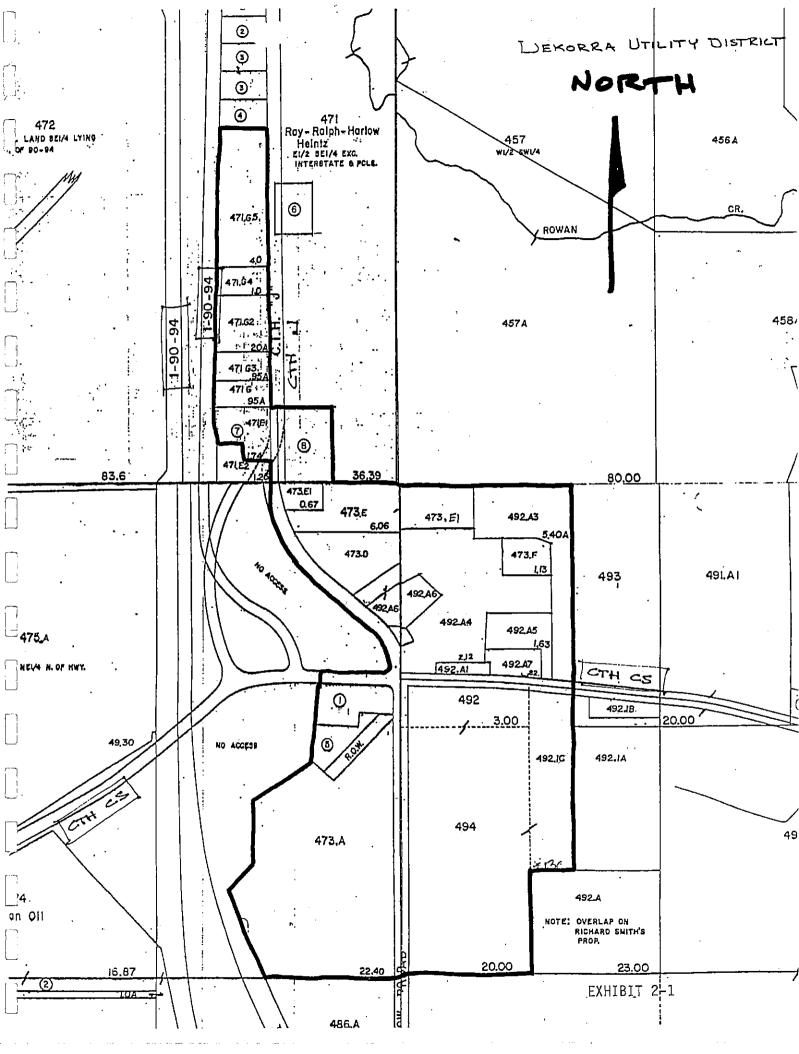
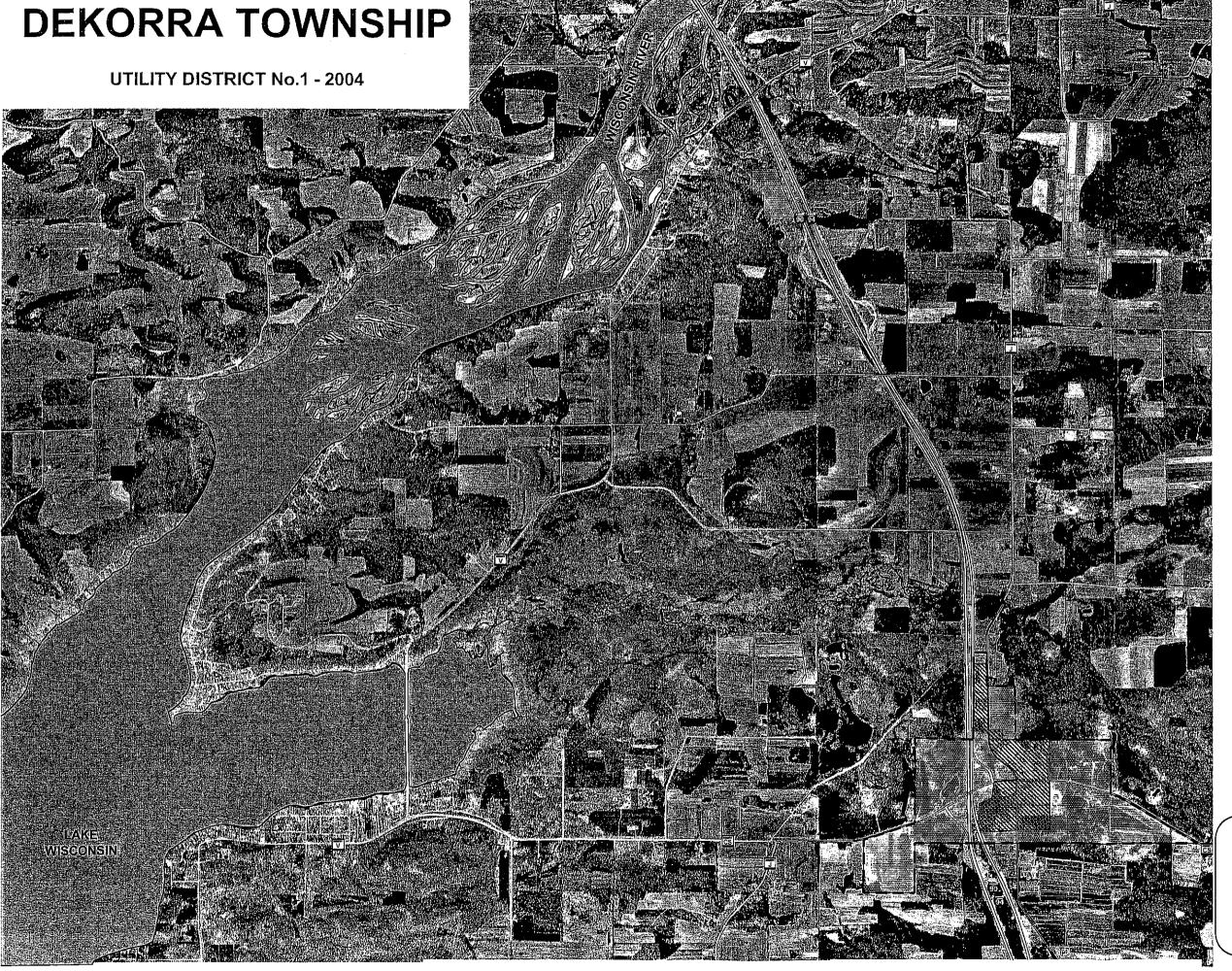


	EXHIBIT 2-2
2003	DEKORRA UTILITY DISTRICT NO. 1 BOUNDARY MAP
	District boundary remains the same as in 1998 however the District is in
process of upgradin	ng the boundary to meet the needs of the proposed development scenar





WISCONSIN RIVER



EXISTING UTILITY DISTRICT



PROPOSED UTILITY DISTRICT BOUNDARY





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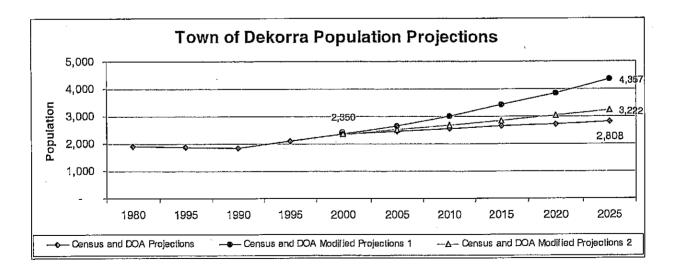
3.2 Population Estimates

The Town of Dekorra population showed a 28.5% increase from 1990 to 2000. This is an average increase of 2.5% per year. The Wisconsin Demographic Services Center anticipates the growth in the Town to be stable over the next 20 years with a growth rate of about 19.5% overall (0.89% per year). If the two sanitary districts in the town do not construct a sewerage collection system and connect to a municipal wastewater treatment plant we might expect the DOA's growth rate is reasonable. Continued pressure by Madison and other metro areas for rural residential development could easily cause a doubling or tripling of that rate because these areas area the significant population centers of the Town. Table 3-1 and Figure 3-1 show the population projections for the Town. The "Projections 1" population increase rate is at the same average annual rate as that seen between 1990 and 2000. The "Projections 2" growth rate is ½ of the "Projections 1" rate.

Table 3-1

	TOWN	OF DEK	DRRA - F	POPULAT	ION PR	OJECTIO	ONS	•		
	Census	Estimate	Census	Estimate	Census	Projection	Projection	Projection	Projection	Projection
	1980	1995	1990	1995	2000	2005	2010	2015	2020	2025
DOA PROJECTIONS	1,914	1,872	1,829	2,090	2,350	2,448	2,544	2,632	2,714	2,808
DOA MODIFIED PROJECTIONS 1				÷	2,350	2,659	3,008	3,404	3,851	4,357
DOA MODIFIED PROJECTIONS 2					2,350	2,503	2,666	2,840	3,025	3,222

Figure 3-1



The anticipated commercial growth in the CS/90-94 interchange area and significant increases in usage at the interstate rest areas will not directly affect the Township's population growth rate. The Town is not interested in attracting or allowing residential development in the present or future expansion areas of the Utility District. The construction of a wastewater treatment facility in the vicinity of the Wisconsin River and CTH V will certainly entice residential development to increase in some river frontage areas. It is difficult to speculate on the increase because many of the connections to a new municipal WWTP may be for existing homes with failing septic systems. With sewer service comes the potential for year-round occupancy. It is our estimate that the population growth will follow a more accelerated path similar to the "Modified Projections 2" graph.

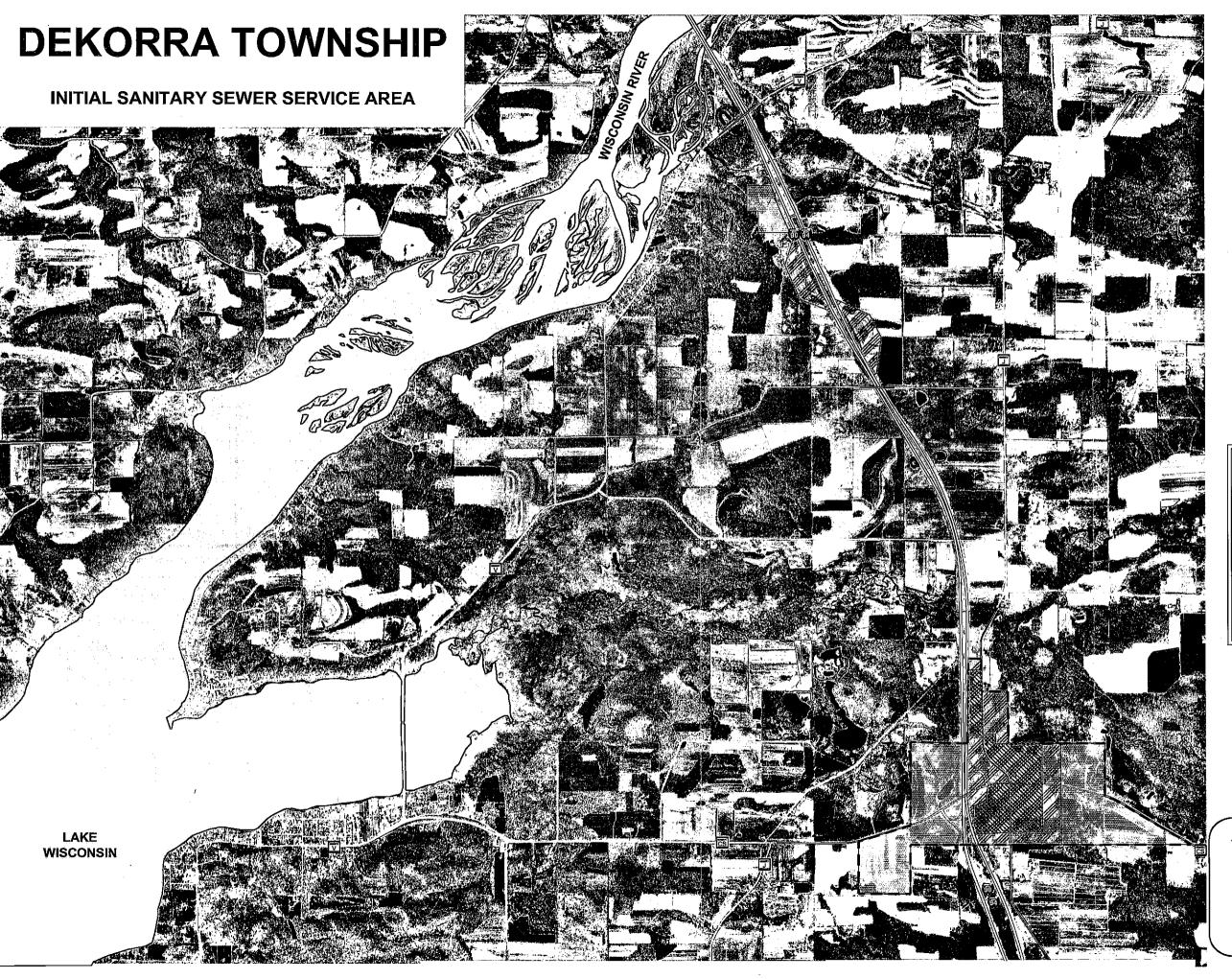
3.3 Planning Period

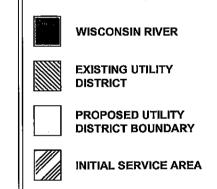
The planning period is 20 years beyond the anticipated construction completion date or approximately 2025

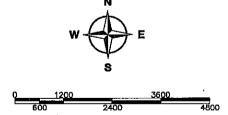
3.4 Existing Environmental Conditions of Planning Area

3.4.1 Geography and Topography

The Town of Dekorra is gently rolling and has a mix of land uses, however the primary land uses agriculture and recreational homes in and around the Wisconsin River valley area. The highest density of recreational homes is along the shoreline areas. There are significant wetland and tributary stream areas that are sensitive to the impact of continuing development. The Rowan Creek watershed is immediately adjacent to the proposed service area and is impacted directly by the existing conditions as well as the potential long-term improvements resulting from the completion of a sanitary sewer collection system and a WWTF to serve the subject area. Some of the shoreline areas along the Wisconsin River valley have steep grades, areas of bedrock near or at the surface, and in some cases, erodible soils. Onsite systems are difficult to implement in these conditions with contemporary standards and there are limited options when replacing failed systems. Generally the replacement option is with a holding tank. There are over 100 holding tanks in the River and Lake shore areas.



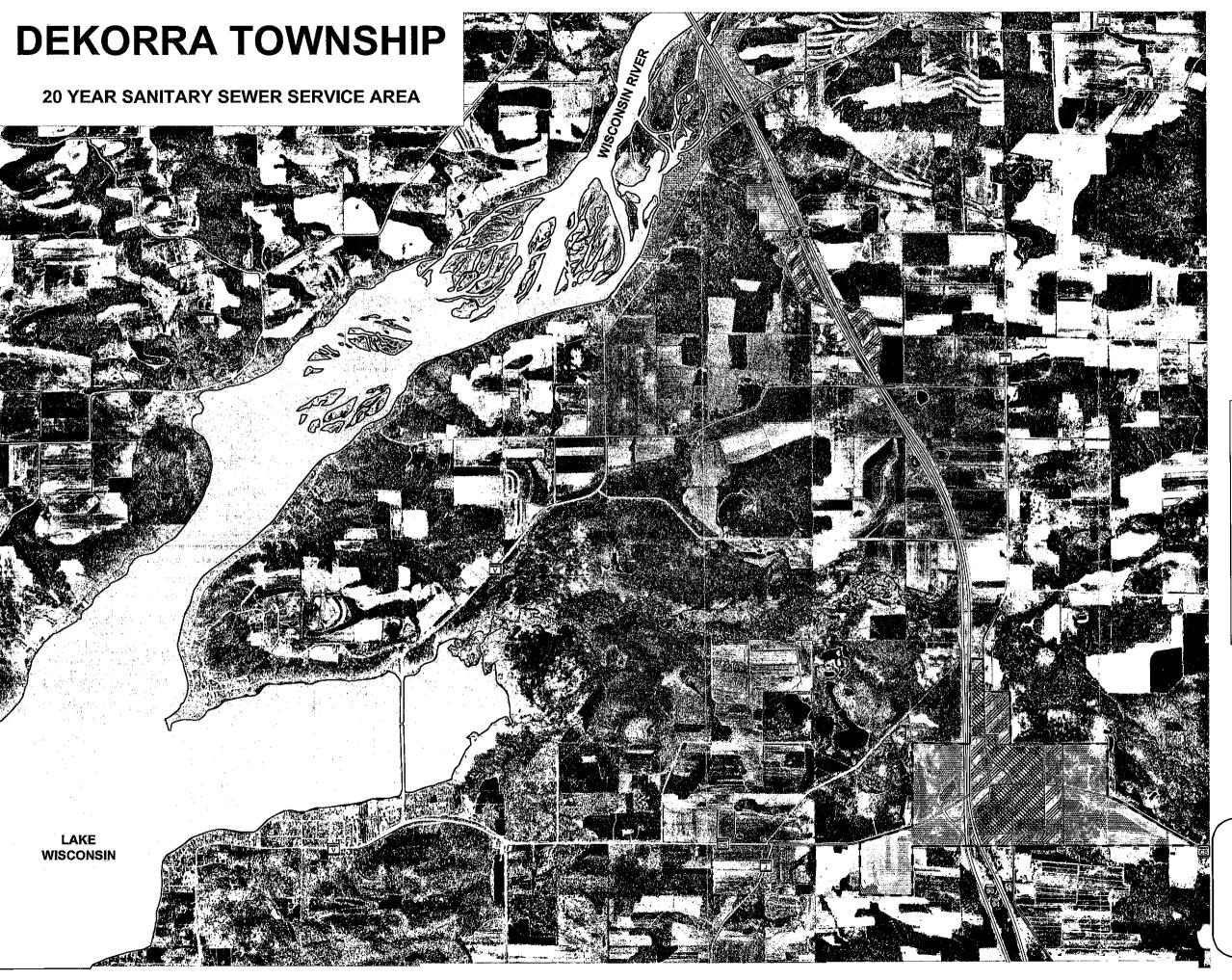


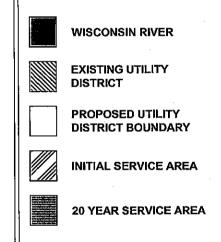


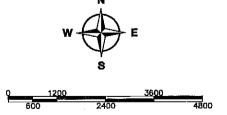
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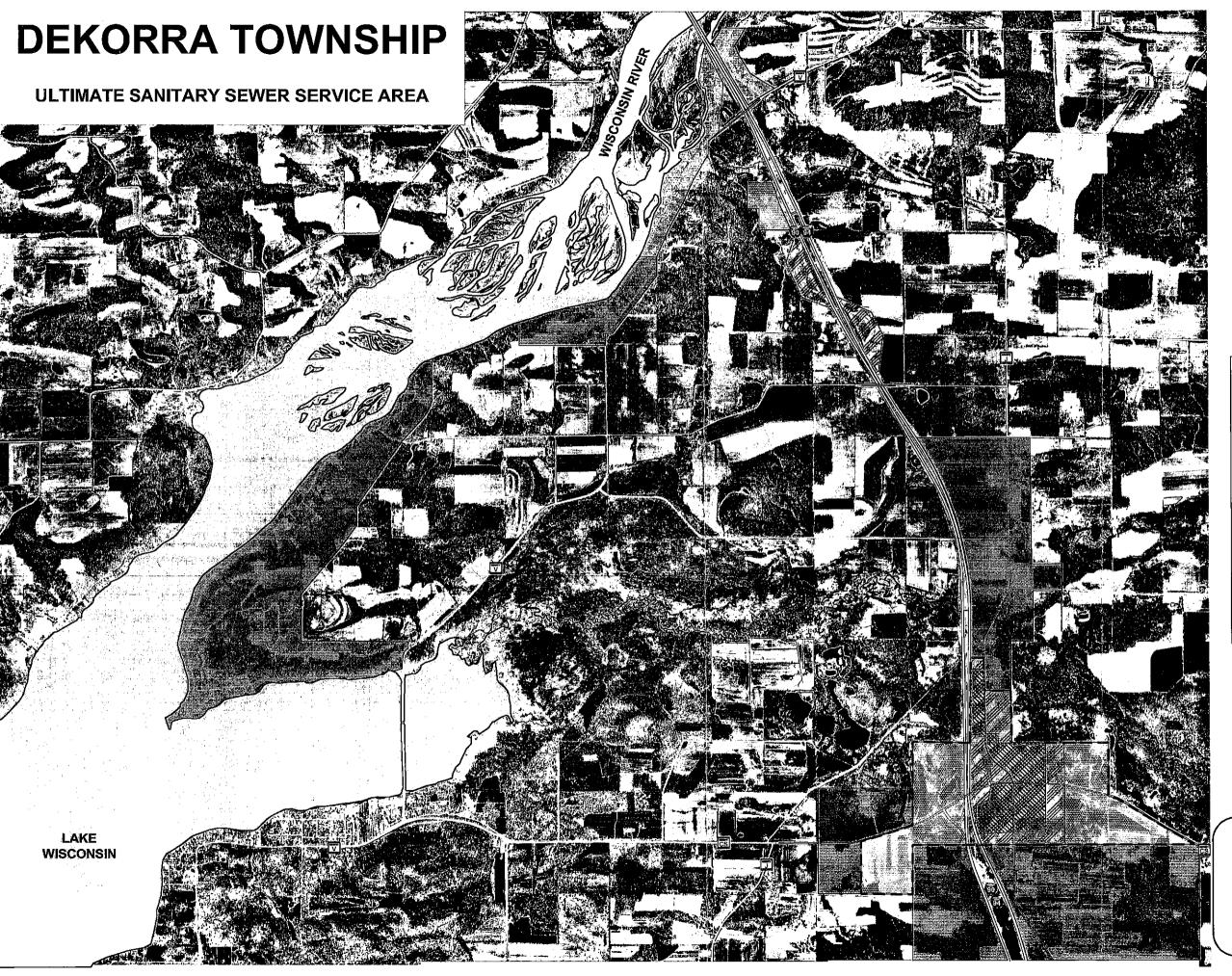


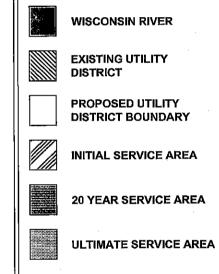


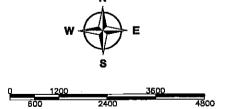
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3.4.2 Geology and Hydrology

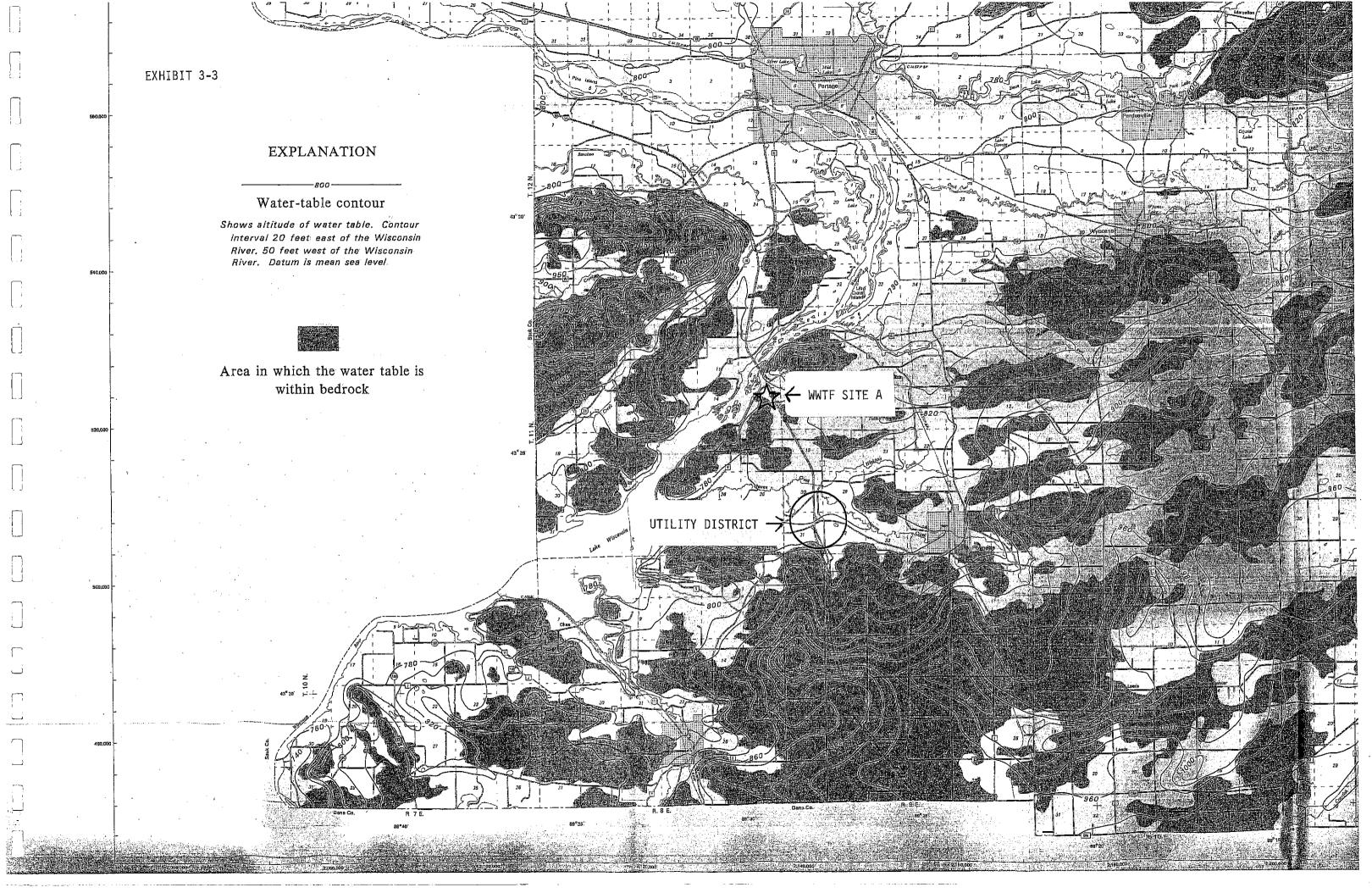
The Town of Dekorra is part of the Wisconsin River valley watershed. The surface water runoff from this portion of the County flows to the Wisconsin River and then to the Mississippi River. The bedrock formations in Columbia County are Upper Cambrian Sandstones and Lower Magnesian Dolomites. The Cambrian sandstone formations are predominant, particularly in this part of the County. Exhibit 3-3 shows the Groundwater contours for the overall service area. The exhibit is taken from the "Ground-Water Resources and Geology of Columbia County, Wisconsin" information circular, 1978. This information is important in determining the impacts of a wastewater treatment plant that considers groundwater discharge.

3.4.3 Soils

Information on soils for this report is from the Columbia County Soil Survey. Detailed information on the area soils can be obtained from the Columbia County Soil Survey and will not be reviewed here. However, high groundwater is the predominant limiting factor for on-site systems and the proximity of sensitive wetland areas makes the potential for increasing nitrate nitrogen concentrations in the groundwater systems. A description of the soils in the proposed service area and associated areas are provided in Exhibit 3-4.

3.4.4 Climate

The climate of Columbia County is referred to as being continental. Sunshine averages about 55% annually and winters are often cloudy, cold, and snowy from November through March. Summers are warm with generally cool nights. January mean temperatures in Columbia County are around 20 degrees Fahrenheit, with July mean temperatures being 75 degrees. Precipitation normally is adequate. June is the wettest month, while late December is the driest. Annual rainfall ranges from 29-30 inches in the northeast and southwest to 31-32 inches in the northwest. Snowfall averages around 40 inches annually and there often is snow cover during 60% to 70% of the winter season.



Lapeer fine sandy loam, 12 to 20 percent slopes, eroded (LaD2).—This soil is in long, narrow areas along ridges and on the sides of drumlins on the till plain. Areas are less than 40 acres in size. In forested areas the surface layer is 2 to 4 inches thick, and the subsurface layer is 3 to 8 inches thick. In cultivated areas, the profile is similar to that described as representative of the series.

Included with this soil in mapping are small areas of Wyocena sandy loam, 12 to 20 percent slopes, eroded; a few small areas where sandstone bedrock is at a depth of 40 to 60 inches, areas where the subsoil extends to a depth of more than 40 inches, areas where the substratum is loamy sand till; areas where the surface layer is loamy fine sand; and many areas adjacent to large areas of silty soils, where the surface layer is loam or silt loam. Also included are a few severely eroded spots and gullies, which are indicated by spot symbols on the soil map.

Runoff is rapid. The erosion hazard is severe.

This soil is poorly suited to cultivated crops. Most of the acreage is used as pasture or woodland, or for growing hay. Capability unit IVe-1; woodland group 3r2; wildlife group 1.

Plainfield loamy fine sand, 12 to 25 percent slopes (PfD).—This soil is commonly in long areas on the sides on valleys and ridges. The areas are commonly 20 to 60 acres in size. Slopes are typically 12 to 20 percent.

Included with this soil in mapping are a few small areas of Plainfield loamy fine sand, loamy substratum, 12 to 25 percent slopes, and Boone loamy fine sand, 12 to 45 percent slopes. Also included are a few small areas where the surface layer is loamy sand.

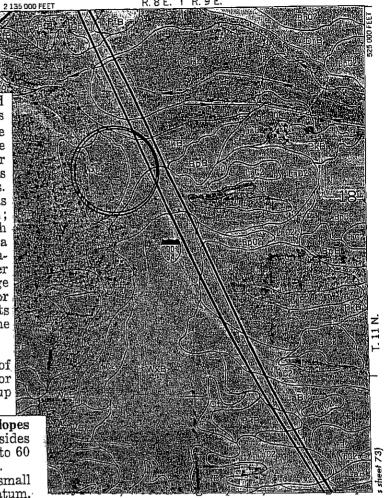
Runoff is medium. The hazard of water erosion is moderate.

Most of the acreage is in scrub oak trees and grasses. A few small areas are in pasture. Capability unit VIIs—3; woodland group 3s2; wildlife group 3.

Plainfield loamy fine sand, loamy substratum, 2 to 6 percent slopes (PkB).— Large, irregularly shaped areas of this soil are on stream terraces and on slight rises on the till and outwash plains. The profile is similar to the one described as representative of the series, but loamy glacial till, silty sediment, or loamy lacustrine deposits are at a depth of about 40 to 60 inches. Mottles commonly occur just above the loamy material.

Included with this soil in mapping are small areas of Plainfield loamy fine sand, 2 to 6 percent slopes; Okee loamy fine sand, 2 to 6 percent slopes; and Puchyan loamy fine sand, 2 to 6 percent slopes. Also included are a few areas where the surface layer is thicker and darker colored and a few nearly level areas.

During wet seasons, this soil is commonly saturated above the loamy or silty material. Runoff is slow. The



R. 8 E. | R. 9 E

Wyocena sandy loam, 12 to 20 percent slopes, eroded (WxD2).—This soil is in long, narrow areas along ridges and drumlins on the till plain. It commonly has a surface layer of very dark brown sandy loam about 2 inches thick and a subsurface layer of brown sandy loam about 3 inches thick. The upper part of the subsoil is brown or yellowish-brown sandy loam about 4 or 5 inches thick. The lower part is dominantly heavy sandy loam. The surface layer and subsoil combined are generally about 30 inches thick. A few gullies have formed. They are indicated by symbols on the soil map.

Included with this soil in mapping are small areas of Lapeer fine sandy loam, 12 to 20 percent slopes, eroded; Wyocena loamy sand, 12 to 20 percent slopes, eroded; and Wyocena fine sandy loam, sandstone substratum, 12 to 20 percent slopes, eroded. Also included are a few areas where the subsoil extends to a depth of more than 40 inches and areas where the substratum is sandy loam glacial till. In some of the more eroded spots, the subsoil is exposed at the surface.

Runoff is rapid. The erosion hazard is severe.

This soil is poorly suited to cultivated crops. Most of the acreage is pastured or wooded. Capability unit VIe-4; woodland group 3r2; wildlife group 1.

3.5 Rest Area Wastewater Flows and Loading

The existing flows from the 190-94 rest areas have been steadily increasing. The current on-site systems are operating at within their capacity. Expanding the rest areas and utilizing onsite wastewater treatment would require the acquisition of private farmland. The opportunity to consider a non-onsite treatment option came when the Utility District was formed and the Town opened discussions with the Wisconsin Department of Transportation (DOT). Site Evaluation Reports for Rest Area 11 and Rest Area 12 were prepared in 1997 by Mead and Hunt, Inc. Refer to excerpts included in appendix A-2.

Since that time and through numerous meetings with the DOT the alternative collection and treatment options for the rest areas were developed. The projected wastewater flows for Rest Areas 11 and 12 have been modified from the original reports by Mead and Hunt and are given in Table 3-2.

The rest areas are slated for upgrade in 2007 and 2008. Rest area 12 (east side) will be completed and operational by the end of 2007. Rest area 11 (west side) will be completed and operational by the end of 2008. Wastewater flows for the rest areas as well as the Utility District during this initial interim time (2005 through 2008) are described in Table 3-5.

The Wisconsin Department of Transportation and the Utility District negotiated an "Agreement for Sanitary Sewer Service" which among other things set the design parameters for the DOT's rest areas based on their maximum three-month average flow during the design year 2027. That information is given below. Even though the design years for the DOT's rest areas and the Utility District do not specifically coincide (2025 vs 2027) we will utilize the DOT design year flow projections in the District's design to satisfy the agreement stipulations. A copy of the agreement is included as Appendix A-1.

The DEPARTMENT estimates the 2027 design condition flows and loadings from the Safety Rest Areas #11 and #12 as follows:

Design Average Flow	60,700 GPD		
Design Max. Day Flow	82,000 GPD		
BOD5	250 mg/l	(127 lb/day @ Qave.)	(171 lb/day @ Qmax.)
TSS	250 mg/l	(127 lb/day @ Qave.)	(171 lb/day @ Qmax.)
NH3-N	10 mg/l	(5.1 lb/day @ Qave.)	(6.8 lb/day @ Qmax.)
Phosphorous	7 mg/l	(3.5 lb/day @ Qave.)	(4.8 lb/day @ Qmax.)

Recent information from sampling analysis of the Lake Mills rest areas indicates the wastewater strength is greater than the agreement has stipulated. Sampling and analysis work is being done through the DOT and is ongoing. The indication at this point is that the anticipated wastewater strength will be similar to the values listed in Table 3-3. These values will be the design basis for the Utility District's WWTF.

TABLE 3-2

Dekorra Utility District #1 Waste Water Treatment Facilities Planning

Rest Areas 11 and 12 - Wastewater Flow Projections

														By: N	Mead and Hunt
		Average	Sunday		Average	Sunday		Average	Sunday		Average	Sunday		Average	Sunday
		Flow	Flow		Flow	Flow		Flow	Flow		Flow	Flow		Flow	Flow
Month	Year	(GPD)	(GPD)	Year	(GPD)	(GPD)	Year	(GPD)	(GPD)	Year	(GPD)	(GPD)	Year	(GPD)	(GPD)
Jan.	2001	10,900	12,700	2007	12,700	15,460	2011	13,900	17,300	2023	17,300	21,400	2027	18,432	22,765
Feb.	2001	12,000	15,200	2007	14,040	19,100	2011	15,400	21,700	2023	19,100	26,800	2027	20,332	2B,498
Mar	2001	14,600	17,200	2007	17,000	22,180	2011	18,600	25,500	2023	23,000	31,500	2027	24,465	33,498
Apr	2001	18,700	22,900	2007	21,880	29,200	2011	24,000	33,400	2023	29,600	41,200	2027	31,465	43,797
Мау	2001	25,500	32,600	2007	29,760	37,220	2011	32,600	40,300	2023	40,200	49,600	2027	42,731	52,697
Jun	2001	33,500	44,600	2007	39,140	50,240	2011	42,900	54,000	2023	52,900	66,600	2027	56,230	70,796
Jul	2001	37,900	51,600	2007	44,200	58,020	2011	48,400	62,300	2023	, 59,700	76,900	2027	63,463	81,762
Aug	2001	37,300	52,100	2007	43,540	56,600	2011	47,700	59,600	2023	58,800	79,500	2027	62,496	78,129
Sep	2001	25,800	35,300	2007	30,060	39,740	2011	32,900	42,700	2023	40,600	52,500	2027	43,164	55,763
Oct	2001	21,100	29,000	2007	24,760	35,540	2011	27,200	99,900	2023	33,500	49,200	2027	35,598	52,297
Nov	2001	17,200	19,800	2007	20,080	25,260	2011	22,000	28,900	2023	27,200	35,600	2027	28,932	37,831
Dec	2001	14,500	17,400	2007	16,960	21,360	2011	18,600	24,000	2023	22,900	29,700	2027	24,332	31,598
Total	2001	269,000	350,400	2007	314,120	409,920	2011	344,200	449,600	2023	424,800	554,500	2027	451,640	589,431
Averag	e 2001	22,417	29,200	2007	26,177	34,160	2011	28,683	37,467	2023	35,400	46,208	2027	37,637_	49,119

TABLE 3-3

Wastewater Strength Parameter	Anticipated DOT Rest Area Wastewater Strength
BOD	500 mg/l
Total Suspended Solids (TSS)	500 mg/l
TKN	180 mg/l
Total Phosphorous	23 mg/l

3.6 Estimated Flows and Loading from CTH CS interchange Area

There is no existing collection system in this area and as a result there is no inflow and infiltration to estimate. Businesses such as the McDonalds restaurant have septage pumping records but there is no other data available for the other existing sites and the existing flows and loadings will be estimated based on traditional data from similar commercial operations. The existing flow and loading data, as estimated from the proposed sewer use area is as follows:

TABLE 3-4

P	resent Day Approximate Utility District Flov	vs
Residential	3 @ 300 gpd	= 900 gpd
Commercial	10 @ 500 gpd	= 5,000 gpd
	2 @ 2000 gpd	= 4,000 gpd
	1 @ 5,000 gpd	= 5,000 gpd
1.00	Total Present Day Estimated Flows	= 15,000 gpd

TABLE 3-5

Initial Interi	m Combined Rest Area	& Utility District Ant	icipated Flows
Year	Utility District Area	Rest Areas 11 & 12	Total Anticipated Flow
2005	15,000	0	15,000
2006	16,000	0	16,000
2007	17,000	0	17,000
2008	18,000	21,600	39,600
2009	19,000	22,200	41,200

4.0 ASSESSMENT OF THE FUTURE SITUATION

4.1 Planning Period

The planning period is 20 years to the year 2025 to be in compliance with the DOT's design period. One of the major elements of the Clean Water Fund rules is that the fundable capacity of sewerage systems exclusive of interceptor sewers is the capacity necessary to treat the projected flows 10 years from the estimated date they will begin operation. This does not include capacity for transporting and treating present and future wastewater from industrial users in the sewer service area. It should be noted that much of the expected growth in the immediate interchange area at CTH CS is expected to be commercial. The year 2015 will be used to estimate the fundable capacity of a treatment facility for domestic and non-significant industrial contributions. The treatment facility will be designed to treat the year 2025 flows.

4.2 Land Use

4.2.1 Residential

Additional residential development is anticipated in the general area of the CTH CS & 190/94 interchange however we are not recommending the development of rural subdivisions such as the one at the HWY 60 & 190/94 interchange.

Residential growth is expected to continue at a gradual and almost subdued pace within the Dekorra Sanitary District areas. This will occur around the lake perimeter with some conversion of seasonal dwellings to permanent year around homes. Most all of the land immediately fronting on the lake within the Sanitary Districts along the first tier is already developed. There is potential for continued development when a sanitary sewerage collection system is completed. There is no indication that this will occur soon.

If Dekorra Sanitary District #1 would consider a sewerage collection system we anticipate they would seek connection to the Dekorra U.D. wastewater treatment plant. If Dekorra Sanitary District #2 would consider a sewerage collection system we anticipate they would seek connection to the Harmony Grove-Okee Joint Sewerage Commission's wastewater treatment plant. At this point and for the immediate future continued development is limited by on-site system design requirements and holding tanks where on-site POWTS (privately owned waste treatment system) have not functioned well.

Residential growth is expected to increase in the River/Lake frontage areas along CTH V between the I90/94/39 overpass and Scheffelbein Road where pockets of development exist. These areas will be the closest to the most likely site for the wastewater treatment facilities. Onsite systems in these areas have had problems in the past and some property owners have expressed an early interest in the potential for municipal sewer service.

4.2.2 Commercial

Commercial growth in the proposed sewer service area would be stimulated by the availability a sanitary sewerage collection system. Significant commercial development is expected in the CTH CS interchange area with the completion of a sanitary sewerage collection system. There is significant traffic along the interstate corridor and commercial development is inevitable. Proper planning and zoning will ensure structured, quality development. This area will develop in phases with the first phase in the area that already is seeing some development (CTH CS-J intersection).

4.2.3 Industrial

There is limited industrial development in the proposed sewer service area for the Dekorra Utility District. The area is primarily agricultural and rural recreational with expected commercial development in the CTH CS interchange area. Zoning and other land use master planning make industrial development unlikely and we do not anticipate any significant industrial development. We do consider the interchange area a likely candidate for light industrial development. The District will consider development requests for light industrial on the individual merits of the industry.

4.3 Demographic Projections

Unfortunately, detailed population data is not available for limited areas of the Town of Dekorra being considered for the initial and ultimate service areas. The demographic projections noted in Tables 3-1 and Figure 3-1 are based upon actual population counts DOA/GEC population projections to 2025.

Future growth will come in two primary forms, that is residential and commercial. The first area of growth will most likely be commercial and will be concentrated in the interchange area. Significant heavy industrial growth is neither expected nor encouraged in this area based on

existing zoning and master planning completed to date. Light industrial growth is a possibility and the needs/impacts are about the same as commercial in that they have limited impacts on the sewer system. Although commercial growth can take on varied forms that may have widely divergent wastewater uses the commercial growth projections will be based on flows and loadings per acre of development.

A second area of immediate interest would be the residential developments located near the selected wastewater treatment facilities as noted in 4.2.1.

The development of a sanitary sewerage collection system for Dekorra Sanitary District #1 would spur a third area of residential development within those Sanitary Districts. This would include offshore sites near the Lake Wisconsin (Wisconsin River Valley area), as well as conversion of seasonal dwellings on the lake and river channel to year around homes or replacement of older cottages with new, year around homes. Estimating the population increase in these areas is difficult at best due to the seasonal nature of the area. There will doubtlessly be conversions from seasonal to year-round that will effect the Town population.

A very similar condition existed in the Town of Lodi during the period from 1980 to present due to the development of a sewerage collection and treatment system for the Harmony Grove and Okee Sanitary Districts. The initial 8 to 10 year period involved the conversion of seasonal dwellings to year round. The second 10 years continued with the seasonal conversion but also saw the expansion of undeveloped areas within the sanitary districts plus some annexation to expand the district boundaries. The impact to the collection/treatment system was a 6% to 7% average annual increase in wastewater flow over a 10 to 15 year period. We anticipate Dekorra will follow a similar path as the 1990-2000 Lodi once the new system is on line and developers are aware of connection options to the WWTP.

Table 4-1

	Dekorra / Lodi Town	ship Popula	ation Comparison	
Year	Dekorra Twp DOA Census/Projection	Percent Change	Lodi Twp DOA Census/Projection	Percent Change
1980	1914	-	1855	<u>-</u>
1990	1829	-0.8%	1913	3.1%
2000	2350	28.5%	2791	45.9%
2025	2808	19.5%	3903	39.8%

There has been little interest in developing a District-wide sewerage collection system for Dekorra Sanitary Districts #1 and #2. At this point we will consider the Districts as future expansion areas for the proposed collection and treatment schemes. The holding tank wastes from existing sites in the general area of this project are anticipated to be contributory to the total wastewater flow and load for this project.

Records provided by Tom Robson of the Columbia County Planning and Zoning Office aided in the ability to estimate the holding tank impact on the facilities sizing. 40% of all holding tanks in Columbia County are in Dekorra. The County's planning and zoning department has estimated there are about 125 holding tanks in the river/lake side areas including sanitary districts #1 and #2 that would impact the facilities sizing. The rate of increase of 7 new tanks per year is projected for holding tank installations over the next 10 to 20 years.

Information from the Portage Wastewater superintendent notes that summer is generally the off-season for the holding tank waste delivered to their WWTP. Summer design flows will reflect this accordingly. The district should anticipate revenues from the holding tank waste to be about \$10 per load or \$4 to \$5 per 1000 gallons. The revenue should be sufficient to cover the cost of an automated transfer station at the WWTP. If Dekorra Sanitary Districts #1 and #2 develop sewerage collection systems in the in the near future the influence of holding tanks will drop dramatically. We will estimate 10,000 gpd of holding tank waste to the WWTP.

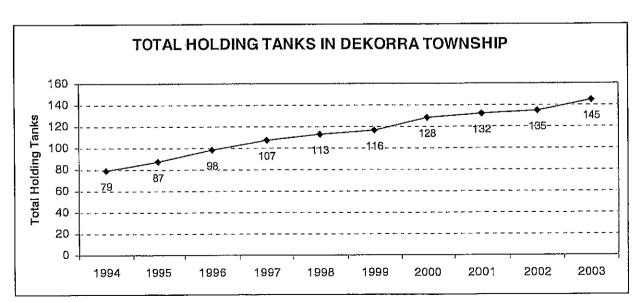


Table 4-2

Another area of growth may be the addition of new homes on available sites surrounding the commercial development core in the interchange area and along the CS corridor. The Town and Utility District are actively discouraging urban sprawl around the Utility District and we do not expect residential subdivision connections to the Utility District.

4.4 Anticipated Flows and Loadings

The anticipated flows are listed in Table 4-3 below. We anticipate this project being constructed in a phased approach due to the general uncertainty of development of the Utility District and the surrounding area. The primary concern is not to oversize the initial phase of this facility making it difficult to operate and maintain. On the other hand it is critical to design the plant such that it can be easily expanded and upgraded to accommodate increased flows and loadings that may occur.

Table 4-3

DEKORRA SERVICE AREA AN	UTILITY DIST D SUMMER FI		TES	
Service Area	2005 (GPD)	2015 (GPD)	2025 (GPD)	Ultimate (GPD)
Dekorra U.D. Partial Dev. (80 Ac)	15,000			
Dekorra U.D. (380 Ac)		66,200	184,000	184,000
Dekorra U.D. Ultimate (540 Additional Ac)				289,200
DOT Rest Areas	0	49,900	60,700	80,000
CTH V Riverside 2025 (75 Ac)			11,300	11,300
CTH V Riverside Ultimate (75 Additional Ac)				11,300
Dekorra S.D. #1 (490 Ac)				269,000
Dekorra Area Holding Tanks	5,000	7,500	10,000	0
Total Flow:	20,000	124,000	266,000	845,000

- 2015 UD flow includes 2005 flows plus 3 existing residences and 80 additional acres developed with 10% of that being roads etc.
- Holding tank flows are calculated as having an initial contribution of 5,000 gpd or about ¼
 of the holding tank waste generated due to summer spreading and other WWTP's.
 Future Holding tank flows are estimated on an annual increase of 7 new units per year
 and 150 gpd/unit, emptied on a routine basis.
- 2025 UD flow includes 2015 flows plus 120 additional acres developed with 85% being

developable and 10% of that being roads etc.

- Ultimate UD flow includes 2025 flows plus 540 additional acres developed with 85% being developable and 10% of that being roads etc.
- Ultimate rest area flow estimates the peak day as the peak summer average flow.
- The Dekorra S.D. #1 flow anticipates an initial connected flow of 84,000 gpd with a 6% per year flow increase over a 20 year period.

As the flow table notes there is a potentially large differential between the initial flows and what could be at year 2015. If a lesser amount of commercial development occurs and the estimated wastewater flow per acre is overstated the 2015 "Average Annual" flow value could easily be 68,000 gpd rather than 124,000 gpd.

Design loadings for the WWTP are as listed below. The nature of the potential development for the utility district is such that we are recommending a phased approach to the design and construction of the WWTP. We recommend the phase 1 sizing for this facility be set for 124,000 gpd with some units and processes further downsized so that the initial flows can be handled properly without causing operational problems for the district.

Table 4-4

	DESIGN SUN	IMER FLOWS AND L	OADINGS	3	
		2015	·	2025	
		CONCENTRATION	LOAD	CONCENTRATION	LOAD
AREA	PARAMETER	(mg/l)	(lb/day)	(mg/l)	(lb/day)
DEKORRA U. D. #1	FLOW (gpd)	73,700		205,300	
& Holding Tanks	BOD	250	154	250	428
& CTH V Future Areas	TSS	250	154	250	428
& Dekorra S. D. #1	TKN	40	25	40	68
	Phosphorous	7	4	7	12
DOT REST AREAS	FLOW	49,900		60,700	
	BOD	500	208	500	253
	TSS	500	208	500	253
	TKN	180	7 5	180	91
	Phosphorous	23	10	23	12
TOTAL	FLOW (gpd)	123,600		266,000	
	BOD	351	362	307	681
	TSS	351	362	307	681
	TKN	97	99	72	160
	Phosphorous	13	14	11	24

4.5 Effluent Limitations and Discharge Alternatives

4.5.1 General

The DNR has generated the "Recommended Effluent Limitations for Wastewater Treatment Facilities Planning - Dekorra Sanitary District" which reviews and estimates effluent limits at several possible discharge locations. Although actual discharge locations may vary somewhat, these recommended effluent limitations were used to draw conclusions about the type of treatment plant process and the best available site for the proposed WWTF.

When it became apparent that the effluent limits would be relatively restrictive for any type of surface discharge other than to the Wisconsin River, land disposal alternatives were also examined. At this stage no fieldwork has been done to verify permeability, groundwater flow direction or related parameters necessary for the detailed design of groundwater seepage cells for land disposal. We have made reasonable assumptions to generate the requisite estimates for various WWTF options.

4.5.2 Effluent Discharge Locations Studied

Primarily seven sites for effluent discharge were studied and are as follows. Refer to Exhibit 4-1 for the location map for individual numbered site locations.

- (Sites 1 & 1A) Surface water discharge to the wetland area north of the existing interstate Rest Area 11 (west side).
- (Sites 2 & 2A) Surface water discharge to the Wisconsin River near the Wisconsin River bridge and/or southwest of the bridge near the main flow channel.
- (Site 3) Surface water discharge to Rowan Creek between I90-94 and CTH J.
- (Site 4) Surface water discharge to Rowan Creek in Section 25 or 30 west of 190-94.
- (Site 5) Surface water discharge to the wetland area west of 190-94 and east of Whalen Bay in Section 25 or 30.
- (Site 6) Surface water discharge to Whalen Bay.
- Groundwater discharge at sites northwesterly from the 190-94 Rest Area 11 (west side) or possible sites between Whalen Bay and 190-94.
- Discharge raw sewage to the Poynette sewerage collection system for treatment at the Poynette WWTP and ultimate discharge to Rowan Creek.

4.5.3 Proposed DNR Effluent Limitations For Facility Planning Purposes

The DNR findings are summarized below and the draft effluent limitations study from the DNR along with their recommendations is attached as Appendix A-2. To briefly summarize the wetland sites were not recommended based on the fact that there were better alternatives in the selection of studied sites and effluent limits were not established for those sites. Effluent limits were not calculated for sites 1 and 1A. The mouth of this small stream originates out of a wetland. In summer this stream has little or no visible flow and may exhibit backwater characteristics. Whalen Bay east of the "grade crossing" (site 6) is also considered a wetland. This eliminates sites 1, 1A, 5, and 6. This leaves Sites 2, 2A, 3 and 4. Groundwater discharge and pumping to Poynette remain as options. Effluent limits are summarized in Table 4-5.

Clearly the Rowan Creek discharges are restrictive and would require advanced treatment to consistently and reliably meet limits. The most economically viable alternatives that remain are the Wisconsin River discharge, the land (seepage cell) disposal option and pumping to Poynette. These options will be considered further in the alternative wastewater treatment systems studied.

Table 4-5
EFFLUENT LIMITS RECOMMENDED BY THE WISCONSIN DNR

Site	BOD5 / TSS	Ammonia	Phosphorous
Site 2 & 2A	45 mg/L summer	No limit	1 mg/l
	30 mg/L winter	No limit	
Site 3 (0.15 MGD)	13 mg/L summer	0.75 mg/L summer	1 mg/l
	27 mg/L winter	8.6 mg/L winter	
Site 3 (0.3 MGD)	7 / 10 mg/L summer	0.7 mg/L summer	
	15 mg/L winter	4.7 mg/L winter	
Site 4 (0.15 MGD)	13 mg/L summer	0.75 mg/L summer	1 mg/l
	28 mg/L winter	8.6 mg/L winter	
Site 4 (0.3 MGD)	7 / 10 mg/L summer	0.7 mg/L summer	
	15 mg/L winter	4.7 mg/L winter	
Groundwater	50 / 50 mg/L	10 mg/L	No limit
		0 mg/L if discharge is	
<u> </u>		within 150' of wetland	

5.0 DEVELOPMENT AND EVALUATION OF ALTERNATIVES

5.1 No Action Alternative

The first general course of action available to the Dekorra Utility District is to take no action. No action would result in a continued discharge of potentially inadequately treated wastewater to the groundwater via on-site systems. It can be argued that conventional onsite systems may reduce groundwater quality. The no action alternative would also result in limiting commercial development in the CS interchange area. The Town would loose the opportunity to combine the DOT rest area wastewater flows into the Dekorra Utility District WWTF. The unique opportunity to combine the DOT rest area flows with existing commercial flows in the interchange area it can be considered a "mini" regionalization project. If the Town does not act on this issue the DOT will proceed with constructing a larger conventional on-site wastewater system similar to their existing system or constructing a lift station/forcemain conveyance system to transfer their wastewater to Poynette. We believe the no action alternative is undesirable and for that reason we have eliminated it from further discussion in this report.

5.2 Regional Solution

A regional system would have all of the components of the sanitary sewer collection system but would transport the wastewater via pumping station(s) to an existing WWTF capable of receiving and treating this additional flow. The most viable regional WWTF would be the Village of Poynette (3 miles) and a second option to consider would be the Harmony Grove / Okee Joint Sewerage Commission's WWTF.

The physical distance (5 miles) from the Harmony Grove Sanitary District sewer system that feeds the Harmony Grove/Okee WWTP excludes it from further consideration unless the Dekorra Sanitary Districts #1 or #2 enter the picture. At this point the Sanitary Districts have not shown interest in installing a sewerage collection system in the near future. It would be unlikely to anticipate Dekorra S.D. #2 to have a collection system viable within the timeline that this project contemplates. If the Sanitary Districts decide to install collection systems in the future after a regional solution has been implemented there will most likely be a split in how they will deal with sewage treatment. All or most of Dekorra S. D. #2 could transfer its sewage to the Harmony Grove/Okee WWTP more economically than pumping it 3 miles to the CS/I90/94/39 interchange. Dekorra S D #1 could transfer its sewage to the Harmony Grove/Okee WWTP as well or, if Poynette's WWTP is selected, construct its own WWTF or, if

the regional solution for this project is "local", transfer its sewage to that WWTF.

The regional issue for the Dekorra Utility District was discussed on several occasions in the early 1990s during the planning of the Poynette WWTF and from and engineering viewpoint remains a viable alternative. An agreement to proportion capital costs for a portion of future capacity of the existing treatment facility, set rates, and maximum wastewater strength parameters would be necessary. This would be the case with any municipality that would participate in a regional solution.

The major drawback to this option is with the use of Poynette's future capacity by the Utility District and surrounding non-Village areas. The Poynette WWTP has a capacity of 470,000 gpd and is presently operating at under 200,000 gpd. Poynette is however, growing with several large subdivisions being planned and the land area to accommodate them. Poynette has shown a reluctance to release its future growth capacity, from a wastewater prospective, to an area outside its corporate boundaries.

The added regional wastewater to the Poynette WWTP would shorten its design life and force the premature expansion of their plant. Rowan Creek is a class B trout stream downstream from the Poynette WWTP and with that carries very stringent mass loading limits. The addition of just the DOT rest areas or the anticipated flows from the present boundaries of the Utility District could be accepted without difficulty. It is the combination of these and the potential future additions to the regionalization from the CTH V area and Dekorra Utility District #1 that cause the problems for Poynette.

From a political standpoint the Town of Dekorra understands that regionalization on a wastewater treatment basis provides a reliance on Poynette for that service. There is concern that due to the interchange's proximity to the Village future annexation of this area could occur. There have been no overtures to this from either side but it remains a Town concern.

There is no doubt that the Poynette WWTP could provide wastewater treatment for this project without difficulty for the next 5 years and still handle its own wastewater treatment demands. Beyond 5 to 10 years the Village ends up shorted because the next expansion will require a much tighter restriction on the effluent limit concentrations in order to meet the mass limits of Rowan Creek. The Village will not short themselves in that fashion. The Town is not interested in a short-term fix for their wastewater issues. For the reasons noted above the regional alternative will not be considered further for this project.

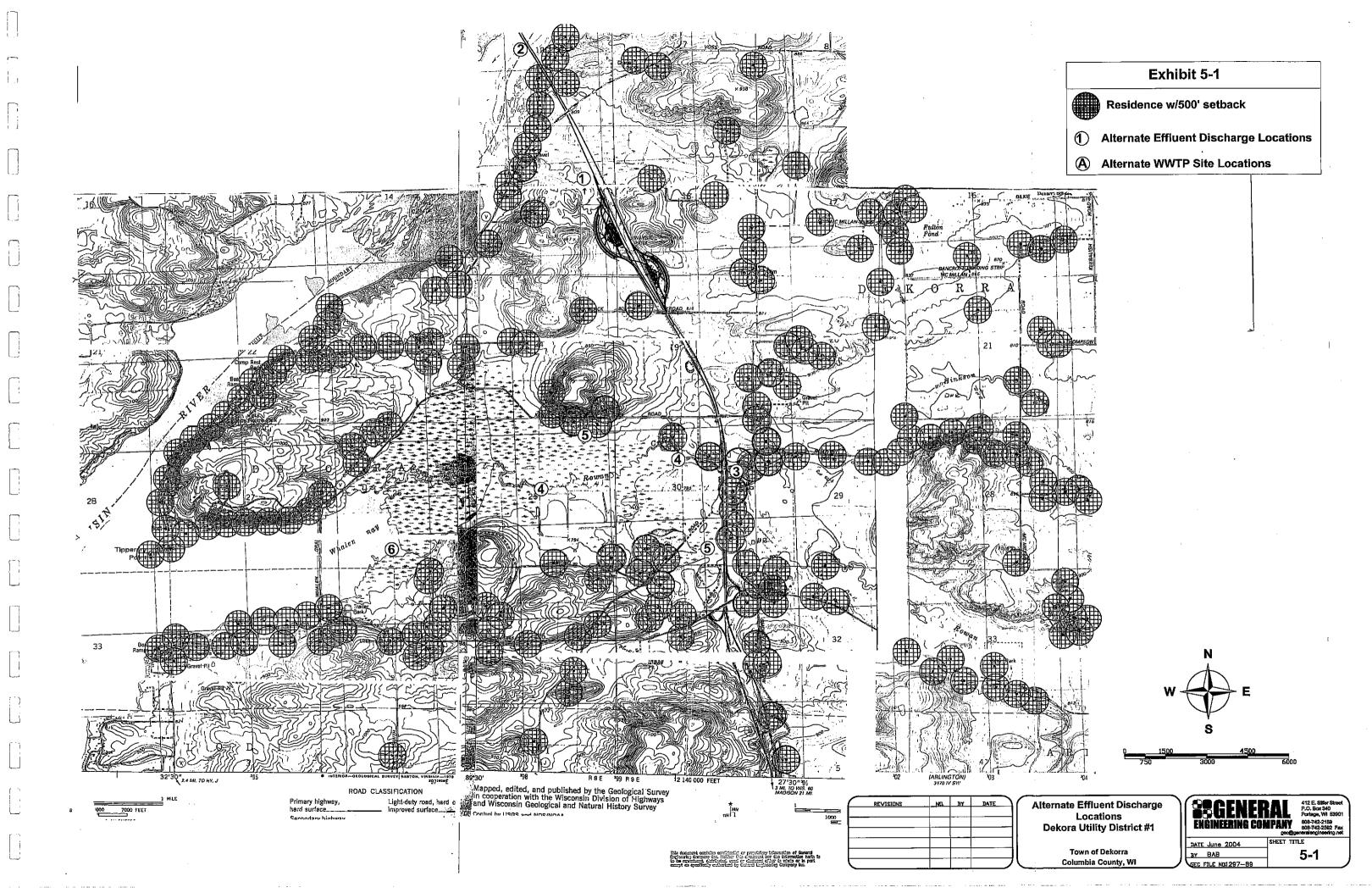
5.3 Alternative WWTP Sites

Numerous potential sites for a wastewater treatment facility were considered. Discussions and site visits were held with the Town of Dekorra, Dekorra Utility District, and interested citizens. Collectively we screened several sites and found that there was a significant opposition by area property owners (farmers) because the sites considered would require the taking of their active, productive agricultural lands. This has and continues to be an important issue in Columbia County and the Town of Dekorra and a high priority has been given to protect and preserve the agricultural lands from being diverted to other uses regardless of the land area or justification. Some other locations were proposed which were either too close to existing residential development or were part of existing wetland resources.

On November 18, 1998 we conducted a site visit to the alternative sites with members of the Dekorra Town Board, interested property owners and two DNR representatives (Bernie Robertson and Nasrin Mohajerani). A second site visit in April 2004 was to consider the possibility of a site just east of the State owned lands (site A). The property owner noted his concern over the taking their farmland out of production (and off the tax roll) when a piece of unused State land sat idle.

Generally, all of the property owners were concerned that their lands could be taken from them through condemnation when the State had land that was not being used. There currently are two (2) possible sites being explored that remain the most viable for economic, environmental, and political reasons. These sites are labeled as site A and site B and are shown on Exhibit 5-1.

Site A is located in Section 13, Town 11 North, Range 8 East and is part of lands owned by the State of Wisconsin. This site is just north of Interstate Rest Area 11 and is located on the westerly side of I90-94. This site is strategically located where the two best effluent options could be explored which are land disposal and direct discharge to the Wisconsin River. Site A is also physically isolated from residential development but in close proximity to the existing Rest Area 11 and could tied in easily to both rest areas' collection systems.



Site B is located in Section 29, Town 11 North, Range 9 East and is also part of lands owned by the State of Wisconsin. Generally this site is at the southwesterly corner of Section 29 and approximately 0.5 miles to the northeast of the CS interchange area. This site could potentially be utilized for an effluent discharge to Rowan Creek. It is however, potentially too close to existing groundwater to function as a land disposal option. An additional advantage is that the site is relatively close to the proposed Utility District sewer service area, plus it could be linked to the rest areas efficiently.

Site B is relatively close to residential development and may not meet required isolation distances. Rowan Creek is a class B trout stream in the area between Poynette and Whalen Bay and with that carries very stringent mass loading limits. Effluent concentrations of 7 & 10 mg/l for BOD and TSS are not unrealistic for mechanical plants. Consistently meeting limits below 7 – 10 mg/l would require the consideration of tertiary filtration. In that this facility would also also receive wastewater from the CTH V area and potentially Dekorra Sanitary District #1 it is clear that this site would become obsolete after about 20 years. Even though WWTFs are designed for a 20 year life they are always looked at from a longer term investment basis. If the Dekorra Sanitary District #1 decided to connect sooner than the predictions show this facility may have a shorter life. For the reasons noted above the Site B alternative will not be considered further for this project.

5.4 Collection System Consideration

Considering the WWTF location alternative considered, the prime location for the main lift station serving the Utility District is along CTH J just south of Rowan Creek. This is the low area of the District and gravity sewers can be run from several locations to reach it. It is also adjacent to the CTH J right-of-way and close to the interstate right-of-way allowing access for the forcemain route to the wastewater treatment facility site. After discussions with the DOT it was determined that the forcemain could be trenched and bored within the interstate right-of-way along its west side to a high point near the west rest area (#11) where the forcemain would revert back to a gravity main, allowing both rest areas to connect by gravity to it. The gravity main would extend down to the north the wastewater treatment facility site. This is considered as Tier 1 in the preliminary assessment discussions with the District property owners.

The gravity section of main within the District will run within the CTH J and CS rights-of-ways and initially serve just the existing developed areas through the construction of about 5,400' of sewer mains, manholes and laterals. These Tier 2 costs for the sewerage collection system are included in Table 5-1 and a summary will be a part of the user charge estimates.

Table 5-1

DEKORRA U.D. #1 – TIER 1 & TIER 2 SEWAGE COLLECTION SYSTEM COSTS

Tier 1 Collection System - Lift Station, Interstate Forcemain & Gravity Sewer to		
No. of	Unit	Total
Item Units Units	Cost	Amount
1 IVV Pump Station, Submersible, Precast Concrete 1 Each \$120,0	00.00	\$120,000
2 8" PVC Gravity Sewer 2,740 LF \$	\$28.00	\$76,700
3 Horiz, Bore 8" Gravity Sewer at Rest Area #11 Ramp 700 LF \$1	150.00	\$105,000
4 Precast Concrete Sewer Manholes 12 Each \$2,0	00.000	\$24,000
5 Rock Excavation 100 CY \$	\$60.00	\$6,000
6 8" HDPE Force Main 8,900 LF \$	\$26.00	\$231,400
7 Vent Manholes For Force Main 3 Each \$7,0	00.00	\$21,000
8 Horiz. Bore 8" FM 190/94, Kent & Black Rds, Rowan Cr. 850 LF \$1	100.00	\$85,000
9 Soil Borings (1 per 200 lf) 66 Each \$5	500.00	\$33,000
10 Meter Manholes 1 Each \$7,5	500.00	\$7,500
11 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 64,700 SY	\$4.00	\$258,800
12 Erosion Control Systems 1 LS \$10,0	00.00	\$10,000
13 Traffic Control Devices 1 LS \$10,0	00.000	\$10,000
14 Permits/Appr. Fees (DNR, Chap. 30, Sewer, D.O.T.) 1 LS \$2,0	00.00	\$2,000
Tier 2 Collection System - Gravity Sewer Serving Initial Connected U. D. Pr		
No. of	Unit	Total
No. of Units Units	Unit Cost	Total Amount
No. of ltem No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$	Unit Cost \$28.00	Total Amount \$151,500
Item No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$	Unit Cost \$28.00 \$20.00	Total Amount \$151,500 \$17,500
Item No. of Units Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0	Unit Cost \$28.00 \$20.00	Total Amount \$151,500 \$17,500 \$36,000
Item No. of Units Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5	Unit Cost \$28.00 \$20.00 000.00	Total Amount \$151,500 \$17,500 \$36,000 \$15,500
Item No. of Units Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$5	Unit Cost \$28.00 \$20.00 000.00 500.00 \$15.00	Total Amount \$151,500 \$17,500 \$36,000 \$15,500 \$39,000
Item No. of Units Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY	Unit Cost \$28.00 \$20.00 000.00 500.00 \$15.00 \$4.00	Tota Amoun \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$126,800
Item No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY 7 Erosion Control Systems 1 LS \$5,00	Unit Cost \$28.00 \$20.00 \$00.00 \$15.00 \$4.00 \$00.00	Total Amount \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$126,800 \$5,000
Item No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY 7 Erosion Control Systems 1 LS \$5,0 8 Traffic Control Devices 1 LS \$5,0	Unit Cost \$28.00 \$20.00 \$00.00 \$15.00 \$4.00 \$00.00 \$00.00	Tota Amoun \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$126,800 \$5,000
Item No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY 7 Erosion Control Systems 1 LS \$5,0 8 Traffic Control Devices 1 LS \$5,0 9 Permits/Appr. Fees (DNR, Chap. 30, Sewer, D.O.T.) 1 LS \$5	Unit Cost \$28.00 \$20.00 \$00.00 \$15.00 \$4.00 \$00.00	Tota Amoun \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$126,800 \$5,000 \$5,000
Item No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY 7 Erosion Control Systems 1 LS \$5,0 8 Traffic Control Devices 1 LS \$5,0	Unit Cost \$28.00 \$20.00 \$00.00 \$15.00 \$4.00 \$00.00 \$00.00	Tota Amoun \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$126,800 \$5,000
Item No. of Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY 7 Erosion Control Systems 1 LS \$5,0 8 Traffic Control Devices 1 LS \$5,0 9 Permits/Appr. Fees (DNR, Chap. 30, Sewer, D.O.T.) 1 LS \$5	Unit Cost \$28.00 \$20.00 \$00.00 \$15.00 \$4.00 \$00.00 \$500.00	Tota Amoun \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$126,800 \$5,000 \$5,000
item No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY 7 Erosion Control Systems 1 LS \$5,0 8 Traffic Control Devices 1 LS \$5,0 9 Permits/Appr. Fees (DNR, Chap. 30, Sewer, D.O.T.) 1 LS \$5	Unit Cost \$28.00 \$20.00 \$00.00 \$15.00 \$4.00 \$00.00 \$500.00	Total Amoun \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$5,000 \$5,000 \$5,000 \$5,000
Item No. of Units Units 1 8" PVC Gravity Sewer 5,400 LF \$ 2 4" PVC Laterals 875 LF \$ 3 Precast Concrete Manholes & Castings 18 Each \$2,0 4 Soil Borings (1 per 200 LF) 31 Each \$5 5 Road Restoration 2,600 SY \$ 6 Dist. Ground Restoration (Topsoil, Fert. Seed & Mulch) 31,700 SY \$ 7 Erosion Control Systems 1 LS \$5,0 8 Traffic Control Devices 1 LS \$5,0 9 Permits/Appr. Fees (DNR, Chap. 30, Sewer, D.O.T.) 1 LS \$5 Construction Subtotal: Total Construction Estimate:	Unit Cost \$28.00 \$20.00 \$00.00 \$15.00 \$4.00 \$00.00 \$500.00	Tota Amoun \$151,500 \$17,500 \$36,000 \$15,500 \$39,000 \$126,800 \$5,000 \$5,000 \$500

5.5 Alternative Wastewater Treatment Systems

5.5.1 Preliminary Screening of Alternative Waste Treatment Processes Considered

Recirculating Sand Filter (RSF) — Recirculating sand filters use beds of granular material to support biological growth on which wastewater is distributed for stabilization. They are capable of a high level of treatment and can reliably produce 10 / 10 effluent when operated properly. The system consists of settling (septic) tanks, dosing tanks, pumps, and piping. The system requires regular maintenance of the treatment facility settling (septic) tanks and the filter media. Recirculating sand filters require minimal operator skill and attention. The sludge from the settling tanks (septic tanks) is removed with a typical septic tank pumper and is generally land spread. RSF systems are typically designed for flow rates of under 200,000 gpd. The projected flow rates for the utility district make the RSF process initially attractive but as the collection system and users expand the system will quickly become obsolete. For this reason the RSF system is removed from further consideration.

Aerated Lagoon with Discharge to Seepage Cells - Another method of providing secondary treatment would involve the construction of an aerated lagoon system. There are two types of lagoons, stabilization and aerated. The stabilization lagoon system is not suitable based on land use requirements and demonstrates limited treatment capabilities. The isolation distance required for an aerated lagoon is 750'.

The aerated lagoon system will not be considered for surface discharge. Surface discharge to Rowan Creek will require advanced treatment techniques and very restrictive limits have been recommended by the DNR. An aerated lagoon system is not capable of reliably producing 7/10 effluent (7 mg/L BOD and 10 mg/L TSS effluent) required to discharge to Rowan Creek or even the 30 / 30 effluent required to discharge to the Wisconsin River. Although aerated lagoon systems are simple and economical to operate they do not meet the environmental standards necessary and will not be considered further for surface discharge.

The aerated lagoon/seepage cell system would be considered because of its ease of operation. This process would consist of treatment of the wastewater by mechanical means (surface aerators or blowers/diffusers) to 50 / 30 effluent (50 mg/l BOD) in the treatment cells, quiescent settling in the final cell and land application of the stored effluent to seepage cells. This system would be environmentally and economically beneficial by recharging the

June 2004

groundwater system. It would, however, <u>only</u> be feasible if a variance would be allowed by DNR for the nitrate limit of groundwater discharge due to the proximity of a marsh or wetland system. Assuming the variance is possible, this alternative could be feasible. The aerated lagoon process is land intensive. Although initially the process would fit into the lands being considered but as the collection system and users expand the system will quickly become obsolete. For this reason the aerated lagoon/seepage cell system is removed from further consideration.

Mechanical Treatment Systems - Secondary treatment alternatives could use any of several mechanical wastewater treatment systems to achieve the required level of treatment for discharge to the Wisconsin River. One must be more selective when looking at the Rowan Creek high quality effluent requirements for treatment.

RBCs - One option is the fixed film biological process referred to as rotating biological contactors - (RBCs). The capability of the RBC process to continually meet advanced secondary treatment levels required to the Rowan Creek discharge without tertiary filtration is suspect. The process is similar in complexity to the conventional activated sludge process that requires anaerobic digesters. This process has found little favor with engineers in recent years due to previous shaft failures. For these reasons, the fixed film process variants are eliminated from further consideration.

Conventional Activated Sludge - An alternative that can be used as a secondary treatment process that can also be incorporated into an advanced treatment system is the conventional activated sludge process. There are four general variations to this process: conventional, step aeration, complete mix and contact stabilization. Our experience with small community wastewater treatment facilities has shown that the transition to conventional activated sludge with anaerobic digestion is more difficult than the extended aeration/oxidation ditch/SBR alternatives. For that reason, the conventional, step aeration, complete mix and contact stabilization options of the activated sludge process alternatives will be eliminated from further consideration.

Extended aeration - Oxidation Ditch and Sequencing Batch Reactor (SBR) - The oxidation ditch and SBR processes are modifications of the extended aeration process and will be considered in detail. The extended aeration process requires relatively low organic loading and a long aeration time. This process utilizes high mix liquor (MLSS) concentration and low food to microorganism (f/m) ratios. Sludge is wasted less frequently than other activated

sludge process variations. The aeration time is usually 18 to 36 hours. The long aeration periods enhance the systems ability to absorb intermittent shock loads.

The most common extended aeration process alternative in the mid-west is the oxidation ditch process (Figure 5-1). Oxidation ditches are typically constructed in concentric rings or ovals with mechanical surface aeration devices used to provide oxygen transfer and maintain circulation and mixing. The process includes wastewater screening, anoxic and aeration sections of the oxidation ditch, clarification, RAS/WAS sludge pumping, sludge storage, chemical treatment & disinfection (surface water discharge) and discharge to either surface water or groundwater. A standard circular (covered) clarifier will be utilized to separate settleable sludge from the clear effluent. Sludge that is periodically wasted is stabilized through the extended aeration process. Compliance with the NR 504 sludge regulations will require aeration in a 180 day sludge storage facility to reduce pathogens to acceptable levels.

The oxidation ditch process is the one of the most stable processes and is simple to operate. It is the same system that is utilized at the Poynette, Baraboo and Devils Head WWTPs. It will provide wastewater treatment to advanced secondary levels (10 mg/l BODs and 10 mg/l TSS) with phosphorus removal and discharge to a main tributary or directly to the Wisconsin River.

The oxidation ditch plant will require a full-time operator with a relatively high degree of operator skill. A concern with the ditch process is its cooling of the wastewater during winter months. The influent wastewater will typically enter the WWTP at a winter temperature as low as 7°C. Mechanical aeration will further reduce the wastewater temperature increasing the risk of denitrification problems. Operating the ditch aerators with variable frequency drives (VFDs) allows the operator flexibility to deal with the impacts of low temperature the high dissolved oxygen that goes with it. This option will include the VFD feature. The oxidation ditch is a proven process and has a history of producing quality effluent when operated properly. This system is feasible and will be evaluated in detail.

A secondary treatment process that is gaining favor in Wisconsin is the **sequencing** batch reactor (SBR). The SBR (Figure 5-2) requires the same overall process functions as the oxidation ditch system but combines some functions in a single tank or structure. The main process tanks function as anoxic, aerobic and clarification tanks. The process does require a higher level of process control sophistication to operate because of the multiple uses of the main process tanks. Wastewater screening, WAS sludge pumping, sludge storage, chemical

treatment & disinfection (surface water discharge) and discharge to either surface water or groundwater are required for this alternative as well. The SBR process has not been widely accepted for use as a community based wastewater treatment system in Wisconsin. Its primary use has been with highly seasonal flow areas such as resorts. This system is used widely in the eastern regions of the US. There is an abundance of operators capable of running a standard extended aeration or oxidation ditch type facilities but not a significant number schooled to operate SBRs. This treatment system may have cost benefits worth considering and therefore will be considered in the detailed cost analysis.

5.5.2 Summary of Alternatives for Effluent Disposal

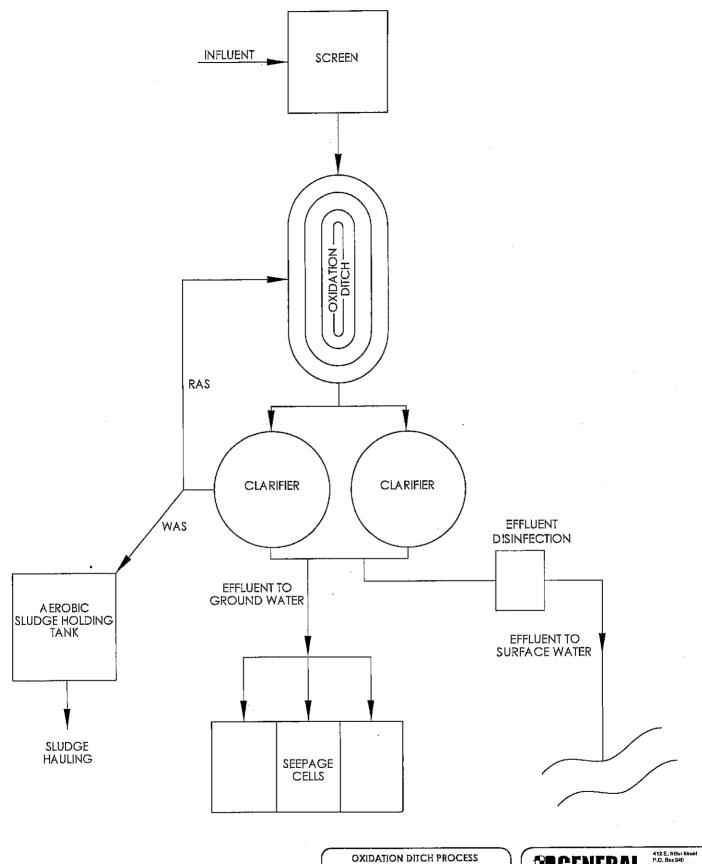
The complete reuse of treated wastewater is not deemed feasible because ground-water supply is abundant in the area. The cost of treating to this level would be excessive and it would be economically unacceptable in Wisconsin. There are two primary alternatives available for effluent disposal that can be incorporated into the treatment alternatives noted above. They will be evaluated in detail with regard to the treatment options being considered.

- 1. Application of effluent on land (seepage cells) for ultimate seepage into the groundwater or to the surface via adjacent wetland systems.
- 2. Discharge of effluent to surface waters (Wisconsin River or Rowan Creek).

5.4.3 Alternatives for Advanced Treatment

Advanced treatment of wastewater in the form of phosphorous removal will be required for effluent discharge to surface water (Wisconsin River or its tributaries). Phosphorous removal can be accomplished through chemical precipitation or biological nutrient uptake. The bio-phosphorus removal process works through a combination of anoxic, anaerobic, and aerobic zones allowing phosphorus to be removed with little or no chemical addition. A backup chemical supply system is also required.

Some phosphorus will be removed biologically in the standard oxidation ditch or SBR process. It is likely that the Dekorra Utility District's initial flows will result in phosphorus loadings below the 150 lb/mo. phosphorus level threshold. Phosphorus can be removed chemically with either alum or ferric chloride. The particular chemical used for phosphorus removal depends somewhat on which chemical works best for this wastewater and on operator



OXIDATION DITCH PROCESS
SCHEMATIC GROUND WATER DISCHARGE
DEKORRA UTILITY DISTRICT WWTP

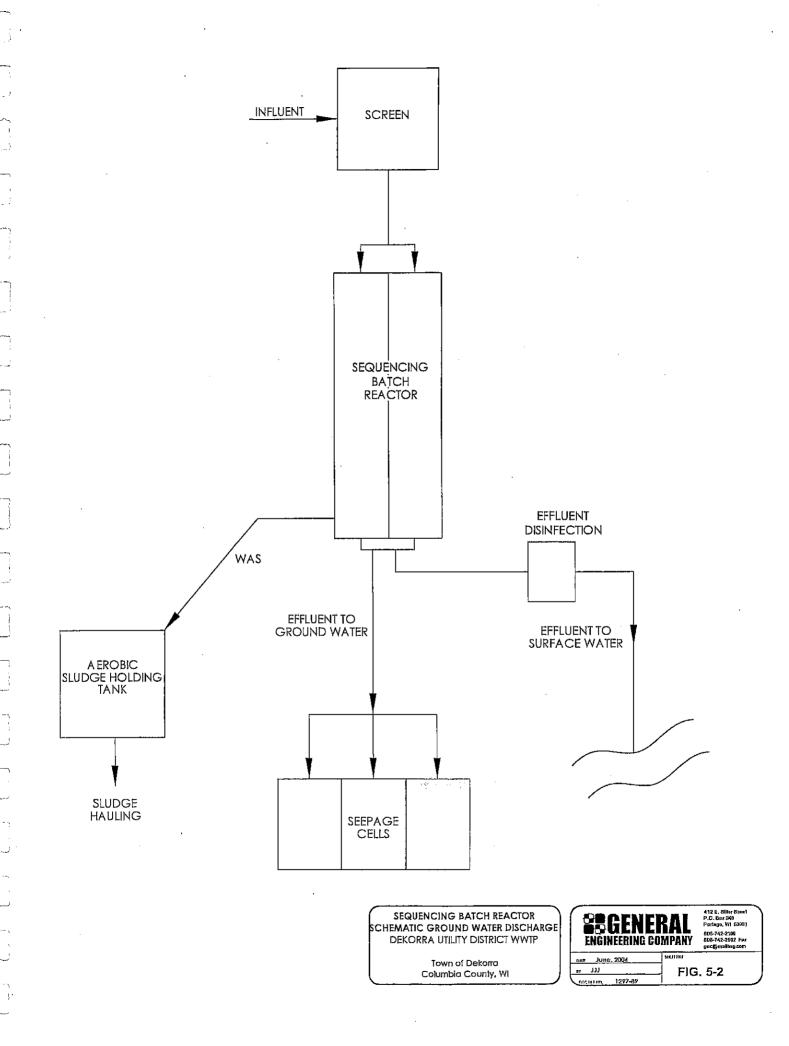
Town of Dekorra Columbia County, WI



412 E. 8iller Bkroll P.O. Box 340 Porlage, VII 53001 508-742-2582 Fex geographicag.com

nan June, 2004 at JJJ

FIG. 5-1



preference. If ultraviolet disinfection is found to be the most cost effective, ferric chloride may not be the chemical of choice because some facilities have noted a blinding effect on their UV tubes from the ferric residual. For the purpose of comparison, the addition of alum will be selected as the chemical added with final determination of chemical type based on wastewater analysis in the design phase and on operator preference once operational.

5.5.4 Alternatives for Disinfection Techniques

Feasible disinfection alternatives for treated wastewater to be surface discharged from the oxidation ditch process are as follows:

- Sodium hypochlorite / Sodium bisulphite
- Liquid chlorine / Liquid sulfate
- Ultraviolet Disinfection

Liquid chlorination / dechlorination compounds such as sodium hypochlorite and sodium or magnesium bisulfite are supplied in either dry or the preferred liquid form. The compounds are mixed in storage tanks, metered, and pumped into a solution line, which in turn is directed to a chlorine contact chamber for diffusion with treated wastewater. The chlorination / dechlorination compounds are applied during the summer months (April through October) at a rate capable of limiting fecal coliform bacteria to less than 400 colonies per 100 mg/l. The seasonal chlorine residual would be set at 37 μ g/l. Disinfection would not be required in the winter months (November through March). Liquid sodium bisulphite or magnesium bisulphite would be used as dechlorination agents during the summer months to reduce current residual levels to within permit requirements.

Gaseous Chlorine supplied in 150 lb cylinders as a liquefied gas under high pressure is metered to solution line, which in turn is directed to a chlorine contact chamber for diffusion with treated wastewater. Chlorine is applied during the summer months (April through October) at a rate capable of limiting fecal coliform bacteria to less than 400 colonies per 100 mg/l. The seasonal chlorine residual would be set at 37 μ g/l. Disinfection would not be required in the winter months (November through March). Liquid sodium bisulphite or magnesium bisulphite would be used as dechlorination agents during the summer months to reduce current residual levels to within permit requirements.

Ultraviolet disinfection (UV) is the third alternative method considered for

wastewater effluent disinfection for the Dekorra Utility District. Wastewater passes around fluorescent tubes where ultraviolet radiation kills off bacteria to below permit levels for fecal coliform bacteria. Some WWTP operators indicate a preference for this type of system because hazardous chemical handling is eliminated. Chemical costs are generally offset by increased electrical power costs. New innovations in the UV systems allow banks of tubes to be installed in effluent channels. These banks are easy to maintain and are efficient from a power standpoint.

In assessing the methods for disinfection for effluent from The Utility District's surface water discharge alternative, only ultraviolet disinfection will be evaluated in detail. From a safety standpoint and a general handling standpoint with a part-time operator during the initial years of operation chemically treating the wastewater will add to the potential operation and maintenance problems at this facility. The UV disinfection systems on the market today are very reliable and simple to operate and maintain.

5.5.5 Alternatives for Sludge Handling

Several alternative methods of sludge treatment and disposal are available for the oxidation ditch process. They include incineration, drying for commercial sale, dewatering or simple direct application of liquid wastewater sludge to agricultural land. Incineration and drying for commercial sale are not feasible alternatives since they require an extensive investment in equipment and have high operation costs. They are discounted from further analysis. Dewatering of sludge consists of two options: sludge thickening (6-7%) and sludge dewatering (>14%). Dewatering of sludge is general done by mechanical equipment rather than sludge drying beds. The final destination is spreading on agricultural land as a fertilizer.

5.5.6 Summary

In conclusion, the most feasible methods for achieving required treatment levels for a new Dekorra Utility District WWTF are as follows:

- Oxidation ditch with surface discharge of effluent (surface discharge requires advanced treatment to meet surface water quality standards).
- Oxidation ditch with land application of effluent (Seepage Cells).
- SBR with surface discharge of effluent (surface discharge requires advanced treatment to meet surface water quality standards).

SBR with land application of effluent (Seepage Cells).

5.6 Detailed Analysis of Feasible Alternatives

5.6.1 General Discussion and Assumptions

As discussed under previous sections of this report the following alternative techniques have been selected for detailed evaluation:

Secondary treatment

- 1. Oxidation ditch system with surface water discharge of effluent to the Wisconsin River.
- 2. Oxidation ditch system with land application of effluent (seepage cells) including an effluent total nitrogen variance from DNR for groundwater discharge.
- 3. SBR system with surface water discharge of effluent to the Wisconsin River.
- 4. SBR system with land application of effluent (seepage cells) including an effluent total nitrogen variance from DNR for groundwater discharge.

Advanced Treatment

1. Phosphorus removal (surface water discharge only).

Disinfection

Ultraviolet (UV) disinfection - surface water discharge only.

Effluent Disposal

- 1. Land application rapid rate seepage cell.
- Discharge to Wisconsin River.

Sludge Disposal

1. Six month sludge storage with Oxidation Ditch and SBR options.

Appropriate combinations of the above options result in four (4) alternative wastewater systems as follows:

5.6.2 Oxidation Ditch at Site A with Surface Discharge to the Wisconsin River

This system would consist of the construction of an oxidation ditch capable of achieving secondary levels of treatment. The system would consist of the construction of an oxidation ditch capable 30 / 30 effluent and capable of phosphorous reduction to levels consistently below 1 mg/l. Since sludge is generated in the oxidation ditch process, final clarifiers and sludge transfer equipment and sludge storage structures would be required. Effluent disinfection and post aeration structures and equipment would be needed as well as effluent outfall piping to the Wisconsin River. Chemical phosphorus removal facilities would be part of the project as well.

For a detailed analysis of the **oxidation ditch at site A with surface discharge to the Wisconsin River** see Table 5-2 outlining capital costs and O & M costs on a present worth basis.

5.6.3 SBR at Site A with Surface Discharge to the Wisconsin River

This system would consist of the construction of an SBR capable of achieving secondary levels of treatment. The system would consist of the construction of an SBR capable 30 / 30 effluent and capable of phosphorous reduction to levels consistently below 1 mg/l. Since sludge is generated in the SBR process, sludge transfer equipment and sludge storage structures would be required. Effluent disinfection and post aeration structures and equipment would be needed as well as effluent outfall piping to the Wisconsin River. Chemical phosphorus removal facilities would be part of the project as well.

For a detailed analysis of the SBR at site A with surface discharge to the Wisconsin River see Table 5-3 outlining capital costs and O & M costs on a present worth basis.

5.6.4 Oxidation Ditch at Site A with Land Disposal at Site A

This system would consist of the construction of an oxidation ditch capable of 50 mg/l BOD treatment levels and the construction of seepage cells for disposal of treated effluent. Since sludge is generated in the oxidation ditch process, final clarifiers and sludge transfer equipment and sludge storage structures would be required. Groundwater discharge with a variance from the DNR regarding effluent total nitrogen concentrations will be requested.

For a detailed analysis of the **oxidation ditch at site A with Land Disposal at Site A** see Table 5-4 outlining capital costs and O & M costs on a present worth basis.

5.6.5 SBR at Site A with Land Disposal at Site A

This system would consist of the construction of an SBR capable of 50 mg/l BOD treatment levels and the construction of seepage cells for disposal of treated effluent. Since sludge is generated in the oxidation ditch process, sludge transfer equipment and sludge storage structures would be required. Groundwater discharge with a variance from the DNR regarding effluent total nitrogen concentrations will be requested.

For a detailed analysis of the SBR at site A with Land Disposal at Site A see Table 5-5 outlining capital costs and O & M costs on a present worth basis.

5.6.6 General Discussion and Assumptions for Cost Effective Analysis

Cost for the following detailed comparisons were obtained from various manufacturers, recent bid tabulations, and through informal quotations with contractors and suppliers. Design parameters were obtained from the State of Wisconsin Administrative Code, NR110 and data obtained from equipment manufacturers. Total present worth of operation and maintenance costs is computed by multiplying the summation of operation and maintenance costs by 11.1288, which is the total present worth factor at an interest rate of 6.375% over a 20-year design period. The 20 year present worth of salvage value at an interest rate of 6.375% is computed by multiplying the summation of values by 0.2905.

The basic guidelines from which cost effectiveness analyses must be developed are given in Section NR 110 of Wisconsin Administrative Codes. The cost effectiveness analyses will use the total present worth method. In determining salvage values, existing structures and equipment being upgraded are assumed to have a service life of 20 years. New buildings are assumed to have a service life of 40 years. New steel structures, piping and equipment were also assumed to have service life of 20 years. Underground piping and concrete structures without equipment were assumed to have a service life of 40 years. There is insufficient land owned by the Dekorra Utility District for any of the alternatives. Land purchase costs are estimated. Operation and maintenance costs are expressed on a yearly basis. Costs are converted to present worth using an equal payment series present worth method.

TABLE 5-2 Dekorra Utility District No. 1

Oxidation Ditch at Site "A" - Surface Water Discharge To Wisconsin River

Capital Costs	Сар	oltal	Design	Re	eplace. Cost	Salva Valt	
ltem		40,000	Life	_	Cost	\$ Valu	20,000
Euro (Eronase	,	40,000	40			•	,
Site Preparation Clearing and Grubbing	;	11,500	40			\$	5,750
Excavation, Backfilling and Compaction		120,000	40			\$	60,000
Experient and the control of the con		35,000	30			\$	11,667
Gravel Road Construction \$ Wastewater Treatment Facility	l	\$5,000	00			*	
Service Building							
Concrete \$		95,600	40			\$	47,800
Service Building \$		170,000	30			\$	56,667
Flow Meters (5)		27,500	15	\$	27,500		
Samplers (2) \$	1	11,000	15	\$	11,000		
Mechanical Bar Screen		69,000	20	•	00.000	•	90.400
RAS/WAS Pumps	i	33,600	15	\$	33,600	Þ	22,400
Standby Generator \$	i	39,600	20				
Oxidation Ditch Concrete	!	212,900	40			\$	106,450
20.10.10.		216,000	20			Ψ	100 100
Equipment \$ Final Clarifler	,	£ (0,000	20				
Concrete \$		60,600	40			\$	30,300
Egulpment \$		120,000	20				
Fiberglass Cover \$		55,000	20				
Aerobic Sludge Holding Tank						_	
Concrete	i	52,600	40			\$	26,300
Aeration System	.	30,000	20	•	40.000	•	44 000
Sludge Pumps and Controls	i	16,800	15	\$	16,800	\$	11,200
Fiberglass Cover	1	38,500	20 20				
Chemical Feed System UV DisInfection	2	25,000 72,000	20				
		10,000	20				
Cascade Aerator Outfall Sewer Fencing	·	820,000	40			\$	410,000
Fencing \$	· }	8,000	20				
Miscellaneous Metals (5% WWTF Cost:)	ì	109,000	20				
Yard Piping (5% WWTF Cost)	•	115,000	40			\$.	57,500
New 3 Phase Electrical Service	6	20,000	20				
Electrical (15%)	3	389,000	20				
Restoration		53,300	20				
Mob./Demob., Bonding/Ins.		224,000	20	\$	88,900	\$	866,000
Subtotal Capital Contingencies (15%)		3,301,000 495,000		Φ	00,800	Ψ	450,000
Capital Contingencies (15%)		3,796,000					
		759,000					
Engr., Insp., Admin. (20%) Total Capital Cost	,	4,555,000					
Operation and Maintenance Costs						Annual Cost	# 500
Administration & Insurance						- \$	5,000
Labor: 30 hours/week x 52 weeks/year x \$20.00/hour =						\$	31,200
Electrical: Oxidation Ditch Equipment						\$	17,900
RAS/WAS Pumping						\$	3,800
Miscellaneous						\$	1,500
Laboratory Testing						\$	000,8
Plant Maintenance @ 1% of Equip. + 0.5% of Structure Cost	ts					\$	14,700
Equipment Replacement Fund (20% of Costruction Costs /	20 years)					\$	38,000
Contract for Sludge Hauling and Disposal:						\$	7,700
						\$	127,800
20 Year Present Worth				Actual		Present	
20 Year Present Worth				Cost		Worth	
Initial Capital Cost				\$	4,555,000	\$	4,555,000
Annual O & M Cost		11.1288		\$	127,800	\$	1,422,255
Future Capital - 10 Year		0,5390		\$	-	\$	-
Future Capital - 15 Year		0.3957		\$	88,900	\$	35,181
Salvage Value		0.2905		\$	866,000	<u> </u>	251,609
TOTAL ESTIMATE OF PRESENT WORTH						\$	6,264,000

TABLE 5-3 Dekorra Utility District No. 1

SBR at Site "A" - Surface Water Discharge To Wisconsin River

Capital Costs		Capital Cost	Design Life	R	eplace. Cost		lvage alue
Land Purchase	\$	40,000	40			\$	20,000
Site Preparation	,	•					
Clearing and Grubbing	\$	11,500	40			\$	5,750
Excavation, Backfilling and Compaction	\$	120,000	40			\$	60,000
Gravel Road Construction	\$	35,000	30			\$	11,667
Wastewater Treatment Facility	•						
Service Building							
Concrete	\$	95,600	40			\$	47,800
Service Building	\$	170,000	30			\$	56,667
Flow Meters (5)	\$	27,500	15	\$	27,500		
Samplers (2)	\$	11,000	15	\$	11,000		
Mechanical Bar Screen	\$	69,000	20	•	- 1,		
WAS Pumps	\$	24,000	15	\$	24,000	S	16,000
Standby Generator	\$	39,600	20	•	_ 1,2	•	,-,
	Ψ	001000	20				
SBR	 \$	205,900	40			\$	102,950
Concrete			20			Ψ	102,000
Control and Aeration Equipment	\$	216,000		\$	24 800		
Blowers (3)	\$	21,600	` 1 5	₽	21,600		
SBR Pole Building (70*80)	\$	137,300	20				
Aerobic Sludge Holding Tank		55 555	44			•	86.600
Concrete	\$	52,600	40			\$	26,300
Aeration System	\$	30,000	20	_		_	
Sludge Pumps and Controls	\$	16,800	15	\$	16,800	\$	11,200
Fiberglass Cover	\$	38,500	20				
Chemical Feed System	\$	– 25,000,	20				
UV Disinfection	\$	72,000	20				
Cascade Aerator	\$	-10,000	20				
Outfall Sewer	\$	20× - 820,000	40			\$	410,000
Fencing	\$	8,000	20				
Miscellaneous Metals (5% WWTF Cost:)	\$	105,000	20				
Yard Piping (5% WWTF Cost)	Š	110,000	40			5	55,000
New 3 Phase Electrical Service	Š	20,000	20			•	
	\$	374,000	20				
Electrical (15%)	\$	53,300	20				
Restoration	φ \$	215,000	20				
Mob./Demob., Bonding/ins.	\$	3,174,000	ZU	\$	100,900	\$	823,300
Subtotal				Ψ	100,500	Ψ	020,000
Capital Contingencies (15%)	<u>\$</u>	476,000 3,650,000					
Subtotal				-			
Engr., Insp., Admin. (20%)	-\$ -\$	730,000					
Total Capital Cost	Þ	4,380,000					
						A Co	.4
Operation and Maintenance Costs						Annual Cos	
Administration & Insurance						\$	5,000
Labor; 30 hours/week x 52 weeks/year x \$20.00/hc	our =					\$	31,200
Electrical:							
SBR Equipment						\$	10,400
WAS Pumping						\$	400
Mixers and Miscellaneous						\$	3,700
Laboratory Testing						\$	8,000
Plant Maintenance @ 1% of Equip. + 0.5% of Stru	cture Costs					\$	17,500
Equipment Replacement Fund (20% of Costruction	n Costs / 20	vears)				\$	36,500
Contract for Sludge Hauling and Disposal:	., 000.07.20	Junio				\$	7,700
Contract for Studge Flacining and Disposal.						\$	120,400
						*	,
OD Maria Dara and Minally	•			Actual		Present	
20 Year Present Worth				Cost		Worth	
7-10-10-11-10-1				- CUSK	4,380,000		4,380,000
Initial Capital Cost		44.4000	:	a) Er			
Annual O & M Cost		11.1288		\$	120,400	. \$	1,339,902
Fulure Capital - 10 Year		0.5390		\$	- 	ð.	
Future Capital - 15 Year		0.3957		\$	100,900		39,930
Salvage Value		0,2905		\$	823,300		239,203
TOTAL ESTIMATE OF PRESENT WORTH						\$	5,999,000
<u> </u>							-

TABLE 5-4 Dekorra Utility District No. 1

Oxidation Ditch at Site "A" - Groundwater Discharge On-Site

Capital Costs	Capital Cost	Design Life		eplace. Cost	Salv Val	
Land Purchase \$	40,000	40			\$	20,000
Site Preparation						
Clearing and Grubbing \$	11,500	40			\$	5,750
Excavation, Backfilling and Compaction \$	120,000	40			\$	60,000
Gravel Road Construction \$	35,000	30			\$	11,66
Wastewater Treatment Facility	·					
Service Bullding						
Concrete \$	95,600	40			\$	47,800
Service Building \$	170,000	30			Š	56,66
	27,500	15	\$	27,500	Ψ	20100
	11,000	15	\$	11,000		
	69,000	20	Ψ	1 1 000		
		15	\$	22 600	e.	99.40
RAS/WAS Pumps \$	33,600		Ф	33,600	₽	22,40
Standby Generator \$	39,600	20				
Oxidation Ditch					_	400.49
Concrete \$	212,900	40			\$	106,45
Equipment \$	216,000	20				
Final Clarifier						
Concrete \$	60,600	40			\$	30,30
Equipment \$	120,000	20				
Fiberglass Cover \$	55,000	20				
Seepage Cells						
Seepage Cell Grading \$	15,833	40			\$	7,917
Rip-Rap Interior Berms \$	7,800	40			\$	3,90
Monitoring Wells (3)	9,000	20			\$ \$ \$	4,50
Piping \$	2,000	40			\$	1,000
	2,000	75			Ψ	,,55,
Aerobic Sludge Holding Tank	E0 600	40			\$	26,300
Concrete \$	52,600				Ф	20,00
Aeration System \$	30,000	20	•	40.000	•	44.00
Sludge Pumps and Controls \$	16,800	15	\$	16,800	\$	11,200
Fiberglass Cover \$	38,500	20				
Fencing \$	8,000	20				
Miscellaneous Metals (5% WWTF Cost:) \$	65,000	20			_	
Yard Piping (5% WWTF Cost) \$	68,000	40	-		\$	34,00
New 3 Phase Electrical Service \$	20,000	20				
Electrical (15%) \$	242,000	20			•	
Restoration \$	53,300	20				
Mob./Demob., Bonding/ins, \$	139,000	20				
Subtotal \$	2,085,000		<u> </u>	88,900	\$	449,90
Capital Contingencies (15%) \$	313,000					
Subtotal \$	2,398,000					
Engr., Insp., Admin. (20%) \$	480,000					
Total Capital Cost \$	2,878,000					
Total Suprial Soci	2,5,5,55					
Operation and Maintenance Costs					Annual Cost	
Administration & Insurance					\$	5,00
					\$ \$	31,20
Labor: 30 hours/week x 52 weeks/year x \$20.00/hour =					Ψ	31,20
Electrical:						/=
Oxidation Ditch Equipment					\$	17,90
RAS/WAS Pumping					\$	3,80
Miscelianeous					\$	1,50
Laboratory Testing					\$	8,00
Plant Maintenance @ 1% of Equip. + 0.5% of Structure Costs					\$	9,70
Equipment Replacement Fund (20% of Costruction Costs / 20 ye	ars)				\$	24,00
Contract for Sludge Hauling and Disposal;	•				\$	7,70
Contract for Global Fragaining and Disposed					\$	108,80
					•	
			Actual		Present	
20 Year Present Morth			Cost		Worth	
20 Year Present Worth				0.070.000		2,878,00
			40			2,010,00
Initial Capital Cost	44 4000		\$ 10	2,878,000	\$	
Initial Capital Cost Annual O & M Cost	11.1288		\$	108,800	\$	
Initial Capital Cost Annual O & M Cost Future Capital - 10 Year	0.5390		\$ \$	108,800	\$ \$	1,210,80
Initial Capital Cost Annual O & M Cost Future Capital - 10 Year Future Capital - 15 Year	0.5390 0.3957		\$ \$ \$	108,800 88,900	\$ \$	1,210,80 35,18
Initial Capital Cost Annual O & M Cost Future Capital - 10 Year	0.5390		\$ \$	108,800	\$ \$	1,210,80

TABLE 5-5 Dekorra Utility District No. 1

SBR at Site "A" - Groundwater Discharge On-Site

tem		Capital Cost	Design Llfe		Replace. Cost		ilvage 'alue
and Purchase	\$	40,000	40			\$	20,000
Site Preparation	•	·		•			
Clearing and Grubbing	\$	11,500	40			\$	5,750
Excavation, Backfilling and Compaction	\$	120,000	40			\$	60,000
Gravei Road Construction	\$	35,000	30			\$	11,667
Wastewater Treatment Facility	•						
-							
Service Building	— _{\$}	95,600	40			\$	47,800
Concrete	S	170,000	30			Š	56,667
Service Building	ę.	27,500	15	\$	27,500	Ψ	00,000
Flow Meters (5)	ų.	•	15	\$	11,000		
Samplers (2)	ą.	11,000	20	Ψ	11,000		
Mechanical Bar Screen	4	69,000	15	\$	24,000	e	16,000
WAS Pumps	Þ	24,000		Ψ	24,000	Ψ	10,000
Standby Generator	\$	39,600	20				
SBR			40				400.050
Concrete	\$	205,900	40			\$	102,950
Control and Aeration Equipment	\$	216,000	20	_			
Blowers (3)	\$	21,600	15	\$	21,600		
SBR Pole Building (70*80)	\$	137,300	20				
Seepage Cells							
Seepage Cell Grading	— s	15,800	40			\$	7,900
Rip-Rap Interior Berms	5	7,800	40			\$	3,900
Monitoring Wells (3)	ŝ	9,000	20			\$	4,500
	\$	2,000	40			\$	1,000
Piping	 *	2,000				•	
Aerobic Sludge Holding Tank	— e	52,600	40			\$	26,300
Concrete	S.	30,000	20			*	,
Aeration System	S	16,800	15	\$	16,800	\$	11,200
Sludge Pumps and Controls	φ	•	20	Ψ	10,000	Ψ	11,200
Fiberglass Cover	— ž	38,500					
Fencing	Þ	8,000	20				
Miscellaneous Metais (5% WWTF Cost:)	ş	60,000	20			•	טין בסנ
Yard Piping (5% WWTF Cost)	\$	63,000	40			\$	31,500
New 3 Phase Electrical Service	\$	20,000	20				
Electrical (15%)	\$	226,000	20				
Restoration	\$	53,300	20				
Mob./Demob., Bonding/Ins.	\$	130,000	20				
Subtotal	\$	1,957,000		\$	100,900	\$	407,100
Capital Contingencies (15%)	\$	294,000					
Subjoial	\$	2,251,000					
Engr., Insp., Admin. (20%)	Ś	450,000					
Total Capital Cost	\$	2,701,000					
Total Ouplier Cost	т.	_,,				•	
Operation and Maintenance Costs						Annual Cos	st
Administration & Insurance						\$	5,000
						\$	31,200
Labor: 30 hours/week x 52 weeks/year x \$20,00/hour =						Ψ	0.,
Electrical:						\$	10,400
SBR Equipment						4	
WAS Pumping						ð -	40
						\$	3,70
Mixers and Miscellaneous						\$	8,00
Laboratory Testing						\$	8,60
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure	Costs						
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure	Costs sts / 20 y	ears)				\$	
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co	Costs sts / 20 y	rears)				\$ \$	
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co	Costs sts / 20 y	ears)		·			7,70
Mixers and Miscellaneous Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Sludge Hauling and Disposal:	Costs sts / 20 y	rears)				\$	7,70
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Sludge Hauling and Disposal:	Costs sts / 20 y	rears)	· · · · · ·	Actual		\$	7,700
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Sludge Hauling and Disposal:	Costs sts / 20 y	rears)		Actual Cost		\$ \$ Present	7,70
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Sludge Hauling and Disposal: 20 Year Present Worth	Costs sts / 20 y	rears)		Cost	2,701,000	\$ Present Worth	7,70 97,50
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Sludge Hauling and Disposal: 20 Year Present Worth Initial Capital Cost	Costs sts / 20 y			Cost \$	2,701,000 97,500	\$ Present Worth	7,70 97,50 2,701,00
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Sludge Hauling and Disposal: 20 Year Present Worth Initial Capital Cost Annual O & M Cost	Costs sts / 20 y	. 11.1288		Cost \$ \$	2,701,000 97,500	\$ Present Worth	7,70 97,50 2,701,00
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Studge Haufing and Disposal: 20 Year Present Worth Initial Capital Cost Annual O & M Cost Future Capital - 10 Year	Costs sts / 20 y	11.1288 0.5390		Cost \$ \$ \$	97,500	\$ \$ Present Worth \$ \$	22,500 7,700 97,500 2,701,000 1,085,05
Laboratory Testing Plant Maintenance @ 1% of Equip. + 0.5% of Structure Equipment Replacement Fund (20% of Costruction Co Contract for Studge Haufing and Disposal: 20 Year Present Worth Initial Capital Cost Annual O & M Cost	Costs sts / 20 y	. 11.1288		Cost \$ \$		\$ Present Worth \$ \$ \$	7,700 97,500 2,701,00

Prices given are the best estimates only. Prices must be updated for detailed design. Equipment cost estimates are based upon prices obtained from suppliers. Because of the preliminary nature of these cost estimates, present worth cost differences in the order of 10% to 15% are not considered significant.

In developing operation and maintenance costs several assumptions were used. First, manpower was assumed to cost the Utility District \$20/hr. including normal fringe benefits regardless of the exact job description of the employee. Chemical costs were based on average costs encountered in other plants around the state for similar purposes. Electricity costs were assumed to be \$0.07/kw. Maintenance costs were assumed to be 1% of the capital cost per year for equipment and steel structures only. Collection system costs are excluded.

5.6.7 Summary of Cost Effective Analysis

TABLE 5-6

COST EFFECTIVENESS SUMMARY

Alternative	Capital Cost	O & M Costs	Total Present Worth
1. Oxidation Ditch - Wisconsin River	\$4,555,000	\$127,800	\$6,264,000
2. Oxidation Ditch - Seepage Cells	\$2,878,000	\$108,800	\$4,255,000
3. SBR – Wisconsin River	\$4,380,000	\$120,400	\$5,999,000
4. SBR – Seepage Cells	\$2,701,000	\$97,400	\$3,944,000

5.7 Non-Monetary Differences of Feasible Alternatives

Significant differences that cannot be quantified in monetary terms exist between the treatment alternatives. The primary differences are related to the method in which wastewater treatment is provided. Factors considered important when evaluating treatment alternatives from a non-monetary standpoint are:

- Operation
- WPDES Permit Requirements
- Mechanical Reliability
- Ease of Expansion
- Implementability

5.7.1 Operation

Of the two treatment systems, the oxidation ditch would be slightly easier to operate compared to the SBR alternative due to the inherent computer based complexity of the SBR process. The system is controlled by the use of programmable controllers with an interface with the SBR equipment manufacturer. The operator would be capable of adjusting some time settings of the process program but detailed review of program problems may be difficult even for the local electrician to deal with. A computer interface with the manufacturer would allow a higher level of comfort for the operator in dealing with the system. A similar interface program may be considered for the oxidation ditch system but it is not necessary for normal operation.

Surface water treatment would be more difficult to operate than groundwater treatment alternatives due to the higher level of treatment required and potential chemical addition required. Each of the extended aeration processes allows the operator to make process alterations to improve process performance.

5.7.2 WPDES Permit Requirements

The surface water discharge alternative would tend to be less reliable with respect to meeting WPDES permit requirements due to difficulty treating for phosphorous both biologically and chemically. The SBR aeration process will be more reliable from a winter wastewater temperature basis than the oxidation ditch process because it utilizes blowers to provide its aeration requirements rather than surface aerators that reduce winter wastewater temperatures. The SBR process will incorporate a pole-type building around the tankage to help protect the system from cold weather problems.

5.7.3 Mechanical Reliability

The oxidation ditch process is less control complex than the SBR process and therefore could provide greater mechanical reliability. It does, however, contain more pumps, piping and valves that are subject to wear and breakdown. The typical operator would be able to seek peer advice for mechanical issues involving the oxidation ditch systems more readily than with an SBR.

Surface water discharge alternatives require more physical and chemical processes to meet the WPDES requirements and would have a lower overall mechanical reliability due to

the greater amount of equipment necessary.

5.7.4 Ease of Expansion

All alternatives are expandable to accommodate future increases in design flows and loadings. The SBR has a slight edge in this category because the process utilizes fewer tanks to accomplish its goal and would require less space than the oxidation ditch.

5.7.5 Implementability

The alternatives considered for the groundwater discharge alternatives would be much easier to implement than surface water discharge due to the likelihood of public objection to this option. Public concern over the surface water discharge alternates has in the past been strong. The DNR has in the past noted the discharge would need to be in the main channel area of the river rather than into one of the side channels of the Wisconsin River. The physical disruption from the construction of an effluent discharge forcemain or outlet pipe to the main channel of the river would be significant. This construction would draw more negative attention to the surface water discharge option by objection parties. There would be a reasonable concern that time delays would occur with the surface water discharge option due to public and possibly State issues with this option.

Non-Monetary Treatment Factor Preference

FACTOR	SBR	Oxidation Ditch
Operation	2	1
WPDES Permit Requirements	1	2
Mechanical Reliability	1	1
Ease of Expansion	1	2
Implementability	1	11
Totals:	6	7

The Non-Monetary Differences section shows a slight advantage (lower score) for the SBR system over the oxidation ditch system with either surface water or groundwater discharge. There is a definite non-monetary advantage of groundwater discharge to surface water discharge of effluent.

6.0 EVALUATION OF ENVIRONMENTAL EFFECTS OF FEASIBLE ALTERNATIVES

6.1 Major Impacts

6.1.1 Resource Commitment

<u>Land</u> - Approximately 20 acres of state owned land will be needed to construct the treatment facility and provide for expansion and buffer areas. Right-of-way acquisition or easements will be required for the project for ingress and egress to the site and for the main lift station on CTH J.

<u>Estimated Power Consumption</u> - The estimated power consumption for each of the alternate treatment techniques is shown below:

	Treatment Technique	Kilowatt Hrs/Day
•	Oxidation Ditch Facility w/ surface water discharge	908
•	Oxidation Ditch Facility w/ groundwater discharge	908
•	SBR Facility w/ surface water discharge	568
•	SBR Facility w/ groundwater discharge	568

6.1.2 Physical Changes and Environmental Changes

The existing vegetation (ie. trees and shrubs) would be removed with the construction of a new wastewater treatment facility. The area of land required and subsequent amount of vegetation removal is dependent on the various treatment alternatives considered as well as the specific site conditions. No destruction of sensitive ecosystems, including wetlands or the habitats of endangered species could result with the construction of any of the feasible alternatives. In addition, no damage or pollution of surface waters due to erosion and/or sewage bypass should result during construction.

6.1.3 Archaeological, Cultural, Endangered Resources, and Historic Changes

No destruction of archeological, cultural, endangered resources or historical areas would result with the construction of the feasible treatment alternatives. The WWTP site is planned for construction in a borrow area for the original I90/94 interstate. These issues will be confirmed by written inquiry to the Wisconsin State Historical Society and the Dept. of Endangered Natural Resources.

6.1.4 Violations

No federal or local land use statutes, regulations, or plans would be violated during construction.

6.1.5 Human Use of Land

The site for the proposed treatment facility expansion is not presently owned by the Utility District, and in fact the location remains unresolved at this time. However, no households, businesses, or services would be displaced by the construction of any of the feasible treatment alternatives at the site being considered.

6.1.6 Operation and Maintenance

A wastewater treatment facility could be operated with either contract services or with a part-time operator initially and only a small process laboratory would be required. The operator would need to have the appropriate qualifications and applicable certifications. Operation and maintenance would be consistent with requirements for the type of facility ultimately chosen and would be documented in detail with an O & M manual furnished at the completion of the construction.

6.2 Unavoidable Adverse Impacts

6.2.1 Aesthetics

The treatment alternatives will be constructed in such a manner as to yield an aesthetically pleasing appearance. Minimal considerations are fencing the facility and providing improvements that are as maintenance free and durable as economically viable.

6.2.2 Future Expansion

Some additional land will be necessary for future expansion of any of the treatment system alternatives and should be planned for at the onset of the initial phase of the project.

6.2.3 Noise and Air Pollution

There will be some minimal short-term unavoidable noise impacts such as slightly increased noise levels during construction. However, no significant noise or air pollution is anticipated with the construction activities.

6.3 Short-Term and Long Term Effects

6.3.1 Economic Effects

Capital and maintenance costs for the various feasible alternatives are shown on Tables 5-1 through 5-8 respectively. The State of Wisconsin Clean Water Fund provides low interest loans (bond issue rate) for the capital costs.

The municipal debt retirement costs shown in Table 7-1 are based on an anticipated Clean Water Fund interest rate 4.8% over 20 years. The per-connection costs are based on the properties in the Utility District and those initial users connecting to it.

6.3.2 Environmental Effects

The short term effects from construction of a new collection system and treatment facility at the chosen location should be relatively minimal due to the selection of sites with proper isolation from existing residences. There may be a slight increase in noise levels during construction operations. The long term beneficial effects would be the an improved level of ground water quality in the area.

6.3.3 Irreversible and Irretrievable Commitment of Resources

The construction of a new treatment facility will constitute an irreversible commitment of monetary resources in construction and operational costs. The existing on-site systems at the rest area are overloaded and will be eliminated when they connect to the District's WWTF. The rest areas are both going to be completely replaced as part of the DOT's upgrade project.

7.0 PLAN SELECTION

7.1 Recommendations

A detailed cost-effectiveness analysis and an environmental evaluation was made of the four most feasible alternatives. The cost summary presented in Table 5-9 details the alternatives. In terms of capital costs and total present worth costs, alternative 4 is the least expensive. The sequencing batch reactor process with seepage cell discharge was the most cost effective alternative and as there are no significant adverse environmental effects, this is the recommended alternative. SBRs are proven to be capable of meeting the W-DNR nitrogen limits on a continuous basis allowing for the ground water discharge (seepage cell) option to be utilized. The 500 foot isolation distance between existing or proposed treatment units and existing residences will be maintained (see Exhibit 5-1). It is recommended that the treatment facility upgrade described herein as alternative 4, be constructed on the State of Wisconsin site just north of the existing Rest Area #11 on the west side of the interstate.

7.2 Phased Construction Sequence

A phased construction concept is important in this project's design. The development uncertainties make it reasonable to design and construct a wastewater treatment facility with sufficient capacity to accommodate the anticipated initial capacity and consider the potential for the intermediate design year of 2015. The 2015 flow and loading information found in Table 4-4 would be valid however not all equipment will be installed initially, as a cost savings approach.

The gravity collection system will not extend to serve the entire present utility district. It will be extended to service the Tier 1 and Tier 2 development areas only. As noted previously, Tier 1 includes the main lift station, forcemain to rest area #11 and gravity sewer to the WWTP. The lift station and forcemain will be sized to handle the ultimate design requirements. Sewage lift pumps, motors and starters may be downsized to be more efficient with initial demands. Tier 2 includes 7100' of 8" gravity sewer main, manholes and laterals to serve the existing partially developed area of the utility district.

The recommended SBR wastewater treatment facility alternative would be designed in a phased approach to allow the facility to be expanded to accommodate the 20-year and ultimate design flows and loadings. Based on an initial design flow of 124,000 gpd, a 2 tank SBR would be required for operation during summer months. Winter or off-season conditions

may be able to utilize only 1 SBR tank. The initial construction would include a headworks area with sewage screen, 2-tank SBR, 3rd SBR tank for sludge storage, 4 seepage cells and service building. All equipment, concrete tanks, seepage cells and buildings would be sized to accommodate future expansion by allowing for the installation of additional process equipment, pumps, piping, blowers and electrical components. 3 of the 4 seepage cells will be constructed as part of the Phase 1 project.

Table 7-2 contains the preliminary design parameters. Table 7-3 shows a detailed cost estimate for the initial construction phase of the SBR facility and includes annual operation, maintenance and replacement costs. Figure 7-1 shows a preliminary layout of the proposed Phase 1 and future Phase 2 wastewater treatment facility.

7.3 Economic Impact of the Selected Phased Alternative

In reviewing the economic impact of this project the initial Phase 1 costs were considered. These costs have been provided to affected property owners in the Utility District and include the collection system costs for Tier 1 (Lift station and forcemain to WWTF) and Tier 2 (Local Utility District gravity sewers). The District plans to assess on an acreage/unimproved land assessment format. The exact prorationing of the two is not final but it is initially set at 50/50. The assessments are based on initial and proposed District boundaries. The Tier 1 assessments cover the proposed District boundaries and the Tier 2 assessments cover the initial District boundaries and the area to be served by the Tier 2 sewer extensions.

TABLE 7-1 USER CHARGE ESTIMATE SUMMARY

(Capital and Operation & Maintenance Costs of Recommended Sewage Collection System and Wastewater Treatment Facilities for the Phase 1project)

•	Total Tier 1 Collection System Capital Costs	•	\$1,310,000
•	Total WWTP Capital Cost		\$1,802,000
•	Capital Contribution from DOT for Rest Areas 11 & 12		(\$2,316,000)
•	Net Tier 1 Assessable Project Costs		\$796,000

Total Tier 2 Collection System Capital and Assessable Costs \$524,000
 The Utility District plans to assess up front and may offer 10 year payback periods depending on the interest rate available to the District versus individual Properties. A

minimum \$10,000 per parcel assessment is being contemplated.

•	Tier 1 Per Acre Average Assessment (\$796,000/2/377 Ac)	\$1,056/Ac
•	Tier 1 Per Assessed Land Value Assessment (\$796,000/2/\$2,268,400)	\$0.1755/\$
•	Tier 2 Per Acre Average Assessment (\$524,000/2/113 Ac)	\$2,319/Ac

On this basis there is not debt retirement for the District to consider. Future expansion of the WWTP will impact all properties in the District as well as other residential areas that connect to the system. Future expansion of the collection system will impact individual properties requesting the extensions. Water meters will be installed for each user to determine sewer use charge. There is no average charge per user that is estimated at this time.

Tier 2 Per Assessed Land Value Assessment (\$524,000/2/\$1,254,400)

•	Estimated Operation and Maintenance Budget (See Table 7-2 plus estimated \$6,500/yr collection system budget)	\$83,200
•	Total Annual User Charge to DOT for Rest Areas 11 & 12 (40% +)	\$33,300

Total Annual User Charge to Utility District Users (60% ±) \$49,900
 Total Monthly User Charge Cost (5,000 Gallons/Month Average) \$12.50

If the District decides to finance the capital costs for the users the monthly costs will include debt retirement costs as well.

7.4 Preliminary Design of Treatment Works

The flow schematic of the recommended treatment system is enclosed as Figure 5-2. The preliminary unit design parameters for the recommended treatment system are as follows:

Table 7-2

Design Parameters:	2015	2025
Summer average design flow (gpd)	124,000	266,000
 Organic loading of BOD/TSS/TKN (ppd) 	362/362/99	681/681/160
Design winter wastewater temperature		45° F (7° C)
Design summer temperature		68° F (20° C)
Volumetric loading per aeration volume	12.5	lb BOD/1000 cf
Site elevation		790.00 USGS
 Tank Size 3 @ 20' x 50' x 18' each 	1 to 2 req'd	3 req'd
 Blowers 3 @ hp, cfm each on VFDs 	1 req'd	2 req'd
Supply air rate	(cfm/lb BOD/day
Submerged diffusers and air piping to supply at least 2	200% of air dema	and
 Seepage cells (4) - provide for load and rest cycling; S 	Seepage cell sizir	ng to be based
on existing soils data.		

- Sludge storage provided in 3rd SBR tank until separate sludge storage required.
- Service building to include blowers, screening unit, Influent, Effluent and WAS sludge metering equipment, control panels, restroom, laboratory, generator and garage.

8.0 PROJECT IMPLEMENTATION

8.1 Project Scheduling

Table 8-1

May 2004	Sign agreement with State DOT
June 2004	Submit Facilities Plan to the DNR for Review
June 2004	Finalize design contract with Gen Engineering
June 2004	Finalize acquisition of DNR property for WWTP
June 2004	Finalize routing of gravity sewer and forcemains
Sept 2004	DNR approval of Facilities Plan
Aug 2004	Begin Engineering, Plans and Specs
Dec 2004	Complete Engineering Plans and Specs
Dec 2004	Submit Plans and Specs to DNR
Mar 2005	DNR approval of plans and specs
Mar 2005	Bid and Select Contractors
Mar 2005	Sewer Use Ordinance and User Charge System Preparation
June 2005	Start Construction
June 2006	Complete construction
June 2006	Start servicing Utility District
Jan 2008	Start servicing Expanded Rest Area 11

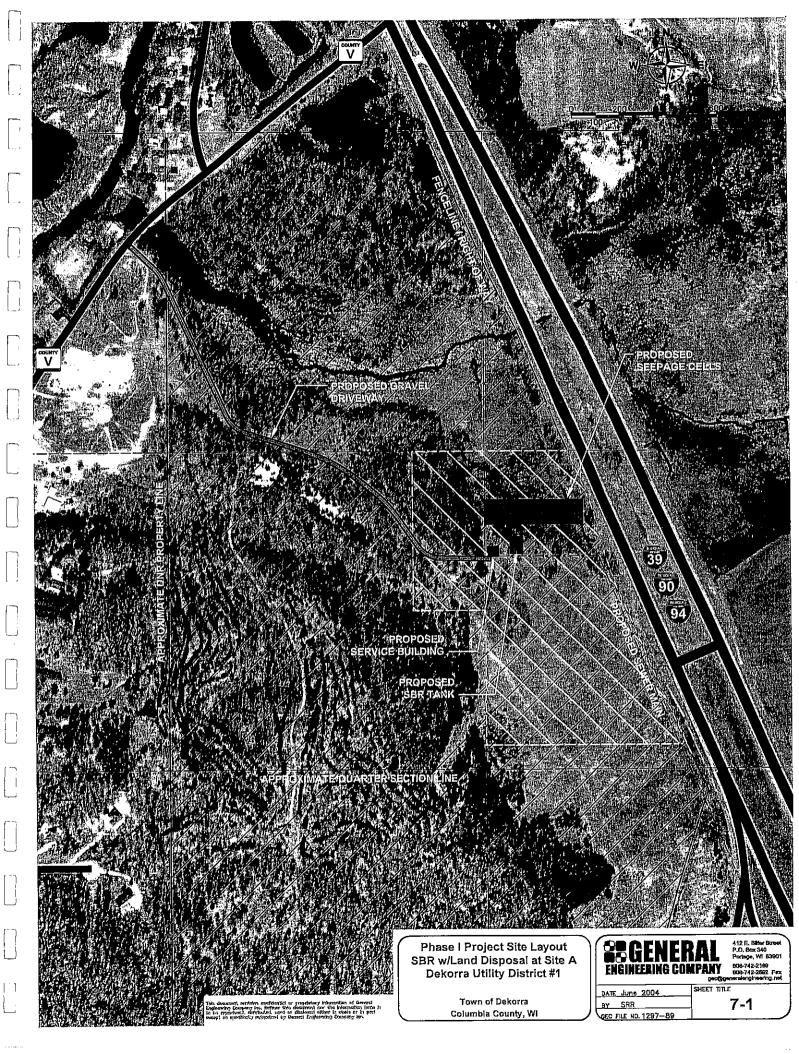
8.2 Public Participation

Participation opportunities have been continually available to the public in the planning process. From the time of initial meetings with the DNR, DOT and the Town Board back in 1997 and 1998 there have been ongoing discussions regarding the need for this project. There have been routine updates and discussions at meetings of Dekorra Town Board and the Dekorra Utility District. Informational meetings were held in 1998, 1999 and 2000 with excellent attendance and interest in the project.

A public hearing is planned for the future to consider the costs, the environmental and other non-monetary effect of the sewage collection system and wastewater treatment facilities project as it is presented in this report. The results of the public hearing including a transcript of

TABLE 7-3 Dekorra Utility District No. 1 Phase 1 Construction (124,000 gpd) SBR at Site "A" - Groundwater Discharge On-Site

Capital Costs Item		Capital 'Cost	Design Life	R	eplace. Cost		Salvage Value
and Purchase	\$	40,000	40			\$	20,00
Site Preparation							
Clearing and Grubbing	\$	9,200	40			\$	4,600
Excavation, Backfilling and Compaction	\$	86,000	40			\$	43,000
Gravel Road Construction	5	35,000	30			\$	11,667
Wastewater Treatment Facility	¥	50,500				*	.,,55,
-							
Service Bullding	— .	75,500	40			¢.	37,750
Concrete	d.					\$	
Service Building	Þ	136,000	30		OT 700	\$	45,333
Flow Meters (5)	¥	27,500	15	\$	27,500		
Samplers (2)	\$	11,000	15	\$	11,000		
Mechanical Bar Screen	\$	69,000	20				
WAS Pumps	\$	24,000	15	\$	24,000	\$	16,000
Standby Generator	\$	39,600	20				
SBR							
Concrete	— <u>s</u>	205,900	40			\$	102,950
Control and Aeration Equipment	\$	144,000	20			т	,,,,,,
	c. An	14,400	15	\$	14,400		
Blowers (2)	— [‡]	14,400	10	ψ	14,400		
Seepage Cells		65.000	40				0.45
Seepage Cell Grading	Þ	9 2,2 00	40			\$	6,100
Rip-Rap Interior Berms	\$	6,200	40			\$	3;100
Monitoring Wells (3)	\$	(9,000,	20			\$	4,500
Piping	\$	1,500	40			\$	750
Aerobic Sludge Holding Tank							
Concrete	— ş	•	40			\$	-
Aeration System	\$	-	20				
Studge Pumps and Controls	Ś	_	15	\$	-	\$	-
Fiberglass Cover	Š	_	20	•		•	
	— ĕ	8,000	20				
Fencing	e.	•	20				
Miscellaneous Metais (5% WWTF Cost:)	Þ	39,000				•	00 500
Yard Piping (5% WWTF Cost)	Þ	41,000	40			\$	20,500
New 3 Phase Electrical Service	\$	20,000	20				
Electrical (15%)	\$	152,000	20				
Restoration	\$	53,300	20				
Mob./Demob., Bonding/Ins.	\$	87,000	20				
Subtotal	\$	1,306,000		\$	76,900	\$	316,300
Capital Contingencies (15%)	\$	196,000					
Subtotal	\$	1,502,000					
Engr., Insp., Admin. (20%)	\$.	300,000					
	\$	1,802,000					
Total Capital Cost	Ŧ	1,002,000					
						Annual C	a a f
Operation and Maintenance Costs						Annual C	
Administration & Insurance						Ď.	5,00
_abor: 20 hours/week x 52 weeks/year x \$20.00/hour =						\$	20,80
Electrical:							
SBR Equipment						\$	10,40
WAS Pumping						\$	40
Mixers and Miscellaneous						S	3,70
Laboratory Testing						\$	8,00
•	Contr					\$	5,70
Plant Maintenance @ 1% of Equip. + 0.5% of Structure			•			Ф \$	15,00
Equipment Replacement Fund (20% of Costruction Cos	sts / 20 y	ears)					
Contract for Sludge Hauling and Disposal:		· · · · · · · · · · · · · · · · · · ·				\$	7,700
						\$	76,70
20 Year Present Worth				Actual		Present	
				Cost		Worth	
Initial Capital Cost				\$	1,802,000	\$	1,802,00
		11.1288		\$	76,700	\$	853,57
Annual O& M Cost		0.5390		\$		S	-
				*		т-	•
Future Capital - 10 Year				g.	76 000	\$	ચስ ለቁ
Annual O & M Cost Future Capital - 10 Year Future Capital - 15 Year		0.3957		\$ e	76,900 316,300	\$ %	30,432
Future Capital - 10 Year				\$ \$	76,900 316,300	\$ \$	30,433 91,89



that hearing regarding this Facilities Plan Report and will be included as Appendix A-3. The appropriate state and regional agencies will be notified of this hearing.

The sewage collection and wastewater treatment facilities project has been the subject of local newspaper articles which keep the public informed of the status of the project and the decision making process.

8.3 Recommended Action

It is recommended that the Dekorra Utility District #1 construct a sewage collection system and wastewater treatment facilities that incorporates the DOT rest areas #11 and #12. The description of the proposed facilities is contained in Section 5. The consideration of regional versus local treatment alternatives is covered in Section 5 also.

8.4 Environmental Impacts of Proposed Action

8.4.1 Water

Adequately treated wastewater will be discharged to seepage cells. Treatment levels will ensure that groundwater resources are not adversely impacted by the proposed treatment processes.

8.4.2 Air

No incineration or similar processes proposed for this project, minimizing the air pollution affects. There anticipated significant odor problems for the planned pumping station or treatment facility. Pathogenic organism transmission into the air should not be a concern as a result of this project expansion.

8.4.3 Land

The Utility District does not presently own the parcel of land where the proposed treatment facility expansion is planned. The WWTF will not encroach closer to existing residential properties than the 500 foot set-back for seepage cells. The project will involve some reshaping of the existing landscape to allow for construction of the gravity sewers, lift station, forcemain and wastewater treatment units. Construction of the gravity sewers, lift

station, forcemain and wastewater treatment facility will not cause any irrepairable damage to any geological formations.

8.4.4 Socio- Economic Affects

The project will have a beneficial affect on public health since pollution will be reduced and the potential for planned development will be enhanced. Recreation capabilities and sensitive local wetlands will be enhanced due to reduced pollution in the groundwater systems and adjacent wetlands, as well as the Wisconsin River. There will be no adverse affects on archeological, cultural or historical values in the area (See Appendix A-3).

8.5 Remedial, Protective, and Mitigative Measures

8.5.1 Aesthetics

The sewage collection and forcemain portions of the project will, for the most part be constructed in existing rights-of-ways. The WWTF will be constructed in a meadow adjacent to the existing rest area #11. It is not in an area of recognized aesthetic value with the exception of prairie plantings that have been recently developed there. Structures should not interfere with natural views. The site is well removed from the developed part of The Utility District. Noise due to operating machinery should be minimal to non-existent and completely overshadowed by the noise of the interstate.

8.5.3 Construction

The project will involve modification of the immediate landscape of the site, but will not affect the natural drainage of the area. Erosion of the site will be kept to a minimum during construction and will be prevented afterwards by maintaining grass cover on all exposed slopes and surfaces. Construction operations will be limited as nearly as possible to the physical boundaries of the existing and proposed site areas. Any unnecessary disturbance of the existing cover vegetation will be prohibited. Standard earth moving construction methods will be employed to build this project. There should be no adverse impacts on aquatic or other wild life in the area. The area will be fenced to restrict public access. All surrounding structures are so located that public inconvenience during construction will be negligible.

8.6 Unavoidable Adverse Effects

There will be no significant change in the aesthetic properties of the area as a result of this project. The treatment plant will be fenced. Structures and fencing associated with the project should not adversely affect the aesthetics of the area. There will be no lasting adverse environmental impacts from the construction activities associated with the proposed facilities. There are minimal short-term unavoidable adverse impacts that may result such as a slightly increased noise levels at the site during construction. The proximity of the site to the interstate will significantly reduce any construction noise concerns. Construction activities will be limited to day light hours.

Energy expenditure will be maintained at a minimum by using modern operation techniques in cooperation with the continuous water quality monitoring program. Electrical power for aeration and chemical usage necessary for treatment of the sewage will be applied at rates indicated as adequate by laboratory analysis of the wastewater.

8.7 Relationship Between Local Short-Term Uses of Man's Environment, Maintenance, and Enhancement of Long-Term Productivity

The long-term affects of the proposed action will be an increase in the quality of the groundwater systems, aquatic environment of the nearby wetlands, and downstream water courses. This project will minimize any risks to health or safety arising from the discharge of inadequately treated sewage effluent to seepage cells or the Wisconsin River from the proposed Utility District wastewater treatment facility.

The recommended alternative will make the most efficient use of the existing systems and proposed site as well as accommodating additional units as may be required to serve the area's needs and by the Department of Natural Resources in the future.

8.8 Irreversible and Irretrievable Committments of Resources

The construction of sanitary sewerage collection system and a wastewater treatment facility for the Dekorra Utility District will constitute an irreversible commitment of monetary resources in both construction of the new treatment facilities and operation of the entire system. Resources used in the construction and operation of the plant are evaluated in the present worth comparison of feasible alternatives.

8.9	Discussion of Problems and Objections
	The discussion of problems and/or objections raised at the public hearing will be
included	by addenda as part of Appendix A-4.

Dekorra Utility District No. 1		
Wastewater Collection & Treatment	Facilities	Plan

APPENDIX A-1

AGREEMENT FOR SANITARY SEWER SERVICE, DOT/DEKORRA U.D. #1

DEKORRA UTILITY DISTRICT NO. 1

AGREEMENT FOR SANITARY SEWER SERVICE TO SAFETY REST AREAS #11 & #12 I.H. 39/90/94, COLUMBIA COUNTY PROJECT I.D. 1013-01-40

This agreement, made and entered into by and between the State of Wisconsin Department of Transportation, hereinafter referred to as "DEPARTMENT", and the Town of Dekorra Utility District No. 1, hereinafter referred to as "TOWN", provides for sanitary sewer service to Safety Rest Areas #11 and #12.

WITNESSETH

WHEREAS, the DEPARTMENT is reconstructing two safety rest areas referred to as Safety Rest Area #11 and #12 on lands owned by the State of Wisconsin on each side of Interstate Highway 39/90/94 within the Town of Dekorra and desires sanitary sewer service, and

WHEREAS, the TOWN wishes to construct new wastewater treatment facilities and sanitary sewerage collection system which upon completion will provide the desired sewer service,

NOW, THEREFORE, in consideration of their mutual promises and covenants as hereinafter set forth, the DEPARTMENT and the TOWN hereby agree as follows:

The TOWN will:

1. Purchase a 20± acre parcel of land presently owned by the State of Wisconsin for the purpose of constructing wastewater collection and treatment facilities that is more particularly described as follows:

The Westerly fractional portion of the SE ¼ of the NE ¼ of Section 13, bounded on the east by the I39/90/94 right-of-way, excluding the southern 100 feet of said quarter-quarter section; also the north 660 feet of the east 300 feet of the SW ¼ of the NE ¼ of Section 13, all of which are in T11N, R8E, Dekorra Township, Columbia County, Wisconsin, and are presently owned by the State of Wisconsin.

(The DEPARTMENT and TOWN will obtain independent appraisals for the lands described above to determine the land value and use the arithmetic average of the two appraisals to determine the final purchase price).

2. Design and construct a sanitary sewerage collection system and appurtenant facilities that will extend from the Dekorra Utility District No. 1 predominantly adjacent to and within the 39/90/94 right-of-way to the new wastewater treatment facilities at the site noted above. Such design shall provide adequate sewer service to both Rest Areas #11 and #12 regardless of any other service the TOWN may provide by this sanitary sewer main.

- 3. Design and let to competitive bids for the construction of the new wastewater treatment facilities, sanitary sewerage collection system, and associated appurtenances (the project) by March 15, 2004. The project may be constructed in phases based on the design conditions for Rest Areas #11 and #12 and initial sewerage service needs of the TOWN.
- 4. Schedule the construction of the new wastewater treatment facilities and sanitary sewerage collection system to provide sanitary sewer service to the Rest Areas #11 and #12 by December 31, 2005. The Department anticipates connection to the WWTP by December of 2007.
- 5. Contribute to the construction of the new sanitary sewerage collection system and wastewater treatment facilities on an initial 20% basis with the remaining 80% match provided by the DEPARTMENT. The final contribution prorationing may vary from the 80/20 split based on actual construction bid values of the construction work. If the initial construction phase of the new wastewater treatment facilities and sanitary sewerage collection system requires the use of all of the funds in the DEPARTMENT's connection fee account any required funds to complete the project will be the responsibility of the TOWN.
- 6. Provide for the ongoing treatment of the design condition wastewater produced by Safety Rest Areas #11 and #12 in compliance with all applicable state and federal regulations. Be responsible for all necessary operation, maintenance, repair and replacement of the sewerage collection and wastewater treatment system.
- 7. Provide for recalibration of the water meters at Rest Areas #11 and #12 on an annual basis to verify and maintain accuracy of the Department's metering system.

The DEPARTMENT will:

1. Pay the TOWN a connection fee of \$2,316,000 toward the construction a new sanitary sewerage collection system and wastewater treatment facilities. The DEPARTMENT'S fee is based upon cost estimates developed by the TOWN utilizing 2027 design condition sewage flow and loading information provided by the DEPARTMENT and the connection fee ordinance of the Village of Poynette.

The DEPARTMENT estimates the 2027 design condition flows and loadings from the Safety Rest Areas #11 and #12 as follows:

- Design Average Flow 60,700 GPD which is the average of the maximum 3 summer months sewage flow from Safety Rest Areas #11 and #12.
- Design Maximum Daily Flow 82,000 GPD
- BODs 250 mg/l (127 lb/day @ Qave.) (171 lb/day @ Qmax.)
 TSS 250 mg/l (127 lb/day @ Qave.) (171 lb/day @ Qmax.)
 NH3-N 10 mg/l (5.1 lb/day @ Qave.) (6.8 lb/day @ Qmax.)
 Phosphorous 7 mg/l (3.5 lb/day @ Qave.) (4.8 lb/day @ Qmax.)

The DEPARTMENT shall share proportionally in the costs of any required future capital improvements to the TOWN's sewerage collection system and wastewater treatment facilities at such time that the following flows and loading conditions from the Safety Rest Areas #11 and #12 are exceeded:

- Average flows or loadings are exceeded for 3 months in a given year.
- Maximum flows or loadings are exceeded 3 times during the maximum 3 month period.

At such time as the Safety Rest Areas #11 and #12 flows and loading conditions are exceeded the DEPARTMENT's capital improvement proportional share shall be based on the DEPARTMENT's portion of the projected total flow and loading to the Town's sewerage collection system serving the rest areas and/or wastewater treatment facilities.

- 2. Contribute to the construction of the new sanitary sewerage collection system and wastewater treatment facilities on an initial 80% basis with the remaining 20% match provided by the TOWN. The final contribution prorationing may vary from the 80/20 split based on actual construction bid values of the construction work.
- 3. Appropriate \$2,316,000 in connection fee funds into auditable account. Allow the TOWN access to audit reports regarding connection fee fund status. The Department shall provided disbursements to a TOWN established, segregated, non-interest bearing account set up specifically for the project. "Request for Disbursement" and "Payment Request Worksheet" forms will be utilized to request reimbursement of construction, engineering and administrative expenses for the project from the DEPARTMENT's connection fee account. If the initial construction phase of the project does not require the use of all of the funds in the DEPARTMENT's connection fee account any remaining funds will revert back to the DEPARTMENT.
- 4. Pay the TOWN monthly sanitary sewer service charges based upon rates approved and updated by the Town Board from time to time and in effect at the time the service is used. Sewage volumes will be determined utilizing a combination of primary water meters and deductive water meters installed so that all wastewater entering the sanitary sewer system will be monitored.
- 5. Cooperate with the TOWN in its Facilities Planning, design, plan and specification preparation and DNR approval process to permit the construction of new wastewater treatment facilities and sanitary sewerage collection system.
- 6. Allow the TOWN or its designee access to facilities within the Rest Area proper, providing such access will not unduly inconvenience or endanger the public.
- 7. The DEPARTMENT will reconstruct Rest Areas #11 and #12 including building sewers that will connect to manholes constructed by the TOWN as part of the TOWN's sanitary sewerage collection system. The DEPARTMENT will provide locations for the rest area connection manholes to the TOWN for incorporation into their sanitary sewerage collection system. The DEPARTMENT will construct and maintain sewage comminution facilities at each rest area to protect downstream wastewater conveyance and treatment facilities.

- 8. The DEPARTMENT shall at all times be subject to and fully and timely abide by any and all sewage, wastewater, utility and other applicable Federal, State, County and Town statutes, ordinances, codes, regulations, rules, promulgations, mandates, edicts, orders and other lawful requirements of whatsoever kind or nature as from time to time are amended.
- 9. The DEPARTMENT will not provide facilities that would permit open dumping into the sewer system and expressly will not construct a public sanitary dumping station at Rest Areas #11 and #12.

This Agreement and the obligations and promises of the TOWN and the DEPARTMENT herein are subject to and condition upon the following:

- A. Approval of this Agreement by the Town Board in open session.
- B. Purchase of State owned lands by the TOWN of State owned lands required for the construction of wastewater collection and treatment facilities.
- C. Approval by the DNR of the TOWN's Facilities Planning, Design and Plans and Specifications for the project.
- D. Acceptance of all required easements and/or permits.
- E. Force Majeure.
- F. Authorization from Columbia County to utilize public rights-of-way for construction of required sanitary sewerage collection system and appurtenant facilities.
- G. Approval of this agreement by the Department of Transportation, Bureau of Highway Construction.
- H. Approval of this agreement by the Governor of the State of Wisconsin.

FORCE MAJEURE

Delay in Performance for Causes Beyond the Control of the Parties: For the purposes of any provisions of this Agreement, the Town shall not be considered in breach or default of its obligations with respect to the beginning and completion of construction of the improvements or progress in respect thereto in the event of delay in the performance of such obligations due to unforeseeable causes beyond its control and without its fault, or negligence, including, but not restricted to Acts of God, acts of the public enemy, acts of the Federal government, fires, floods, epidemics, quarantine restrictions, unforeseen site conditions, strikes, embargoes and unusually severe weather or delays of subcontractors due to such causes, it being the purpose and intent of this provision that in the event of the occurrence of any such delay, the time or times of performance of any of the obligations of the Town with respect to construction of the improvements shall be extended for the period of the delay.

NONDISCRIMINATION

In connection with the performance of work under this Agreement, the TOWN agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color or national origin, handicap, sex, physical condition, developmental disability as defined in S.51.01(5), or sexual orientation as defined in S.111.32(13m). The aforesaid provision shall include,

Final Draft					
	ertising, layoff of	r termination; rat		ding, demotion or transfer; pay or other forms of comp	
In witnes authorized office			e cause	d this Agreement to be exe	ecuted by thei
TOWN OF DEK UTILITY DISTE		,		E OF WISCONSIN RTMENT OF TRANSPOR	TATION
By:Town Ch	airman Dat			Donald J. Miller u of Highway Construction	Date
By:Town Cle	erk Dat	<u> </u>	Ву:	Jim Doyle	Date
				Governor	

APPENDIX A-2

DNR DRAFT EFFLUENT LIMITS STUDY

DEKORRA UTILITY DISTRICT NO. 1



GENERAL Engineering Company, Inc.

Consulting Engineers and Architects since 1912

412 East Slifer Street P.O. Box 340 Portage, Wisconsin 53901 608-742-2169 608-742-2592 Fax gec@mallbag.com

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Wisconsin Department of Natural Resources Bureau of Watershed Management P.O. Box 7921 Madison, WI 53707

Attn:

Mr. Tom Gilbert

RE:

Effluent Limits Request - Dekorra Utility District No. 1, Columbia County

GEC #1297-89

Dear Tom:

One of the outcomes of my meeting with the Dekorra Utility District Committee representatives was that an effluent limitations determination would be sought for a surface water discharge from a potential wastewater treatment plant being considered in the general area of the I90/94 and CTH CS interchange. This WWTP could potentially serve Dekorra's Utility District No. 1, the DOT rest areas to the north, future developments around the Utility District plus Dekorra Sanitary Districts No. 1 and/or No. 2.

We would like specific limits for six (6) potential outfall locations. If the DNR feels any of these outfall options are not viable, please so state and explain. The outfall locations which we would like effluent limitations considered for (see attached map) are as follows:

- 1. Direct discharge to wetland area north of the existing Interstate wayside park.
- 2. Direct discharge to the Wisconsin River Near the Wisconsin River Bridge.
- 3. Direct discharge to Rowan Creek between 190/94 and CTH J.
- 4. Direct discharge to Rowan Creek in Section 25 or 30 West of I90/94.
- 5. Direct discharge to wetland area west of I90/94 and east of Whalen Bay in Section 25 or 30.
- 6. Direct discharge to Whalen Bay.

We will also be looking into the groundwater discharge option at sites north of the existing I90/94 waysides and areas between I90/94 and Whalen Bay.

The design flow which has been established is approximately 150,000 gpd. If Dekorra Sanitary Districts No. 1 & 2 become involved, the design flows could increase to 300,000 gpd or more. Please review and complete effluent limits for these alternatives at your earliest possible convenience. Will you require the effluent limit request worksheet in order to begin the calculation of effluent limits? Utilizing the effluent limit request worksheet from the DNR is difficult at best to determine design flows in the absence of municipal water supply to make water use versus wastewater flow comparisons. If you have any questions, please contact me.

Yours truly, GENERAL ENGINEERING COMPANY, INC.

Jerry A. Foellmi Registered Professional Engineer JAF/jcs cc: Margo Holzman - Twp Clerk





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412 East Slifer Street P.O. Box 340 Portage, Wisconsin 53901 608-742-2169 608-742-2592 Fax gec@mailbag.com

November 10, 1998

Town of Dekorra Utility District Committee Attn: Margo Holzman N3871 Holzman Drive Poynette, WI 53955

RE:

Preliminary Site Review

GEC #1297-89

Dear Margo:

I would like to schedule a preliminary site review meeting with all interested parties to look over each of the six (6) potential surface water discharge areas, as well as other potential wastewater conveyance and treatment areas for the Utility District. Hopefully the weather will cooperate with us. I am proposing to meet at 1:00 p.m. on Wednesday, November 18, 1998 at the McDonald's Restaurant at the CTH CS and I90/94 interchange where we will drive/walk to each of several locations (see attached map). If time allows, we may also visit the Poynette and Harmony Grove/Okee Wastewater Treatment Facilities. I would anticipate the site review to last 2-3 hours.

If you or other committee members know of special permissions or access requirements we may need to access the sites noted on the map, please let me know so we can coordinate those prior to the meeting. I will plan to have a van available which can hold up to 7 people. If there are other vans available for use, this would be appreciated.

By copy of this letter, the Utility District Committee, Dekorra Sanitary District No. 1 and No. 2, DNR, Mead & Hunt, and DOT will also be notified of the meeting. If anyone receiving this letter is not able to attend, please contact me as soon as possible. Thank you for your cooperation. We look forward to seeing you on November 18^{th.}

Yours truly,

GENERAL ENGINEERING COMPANY, INC.

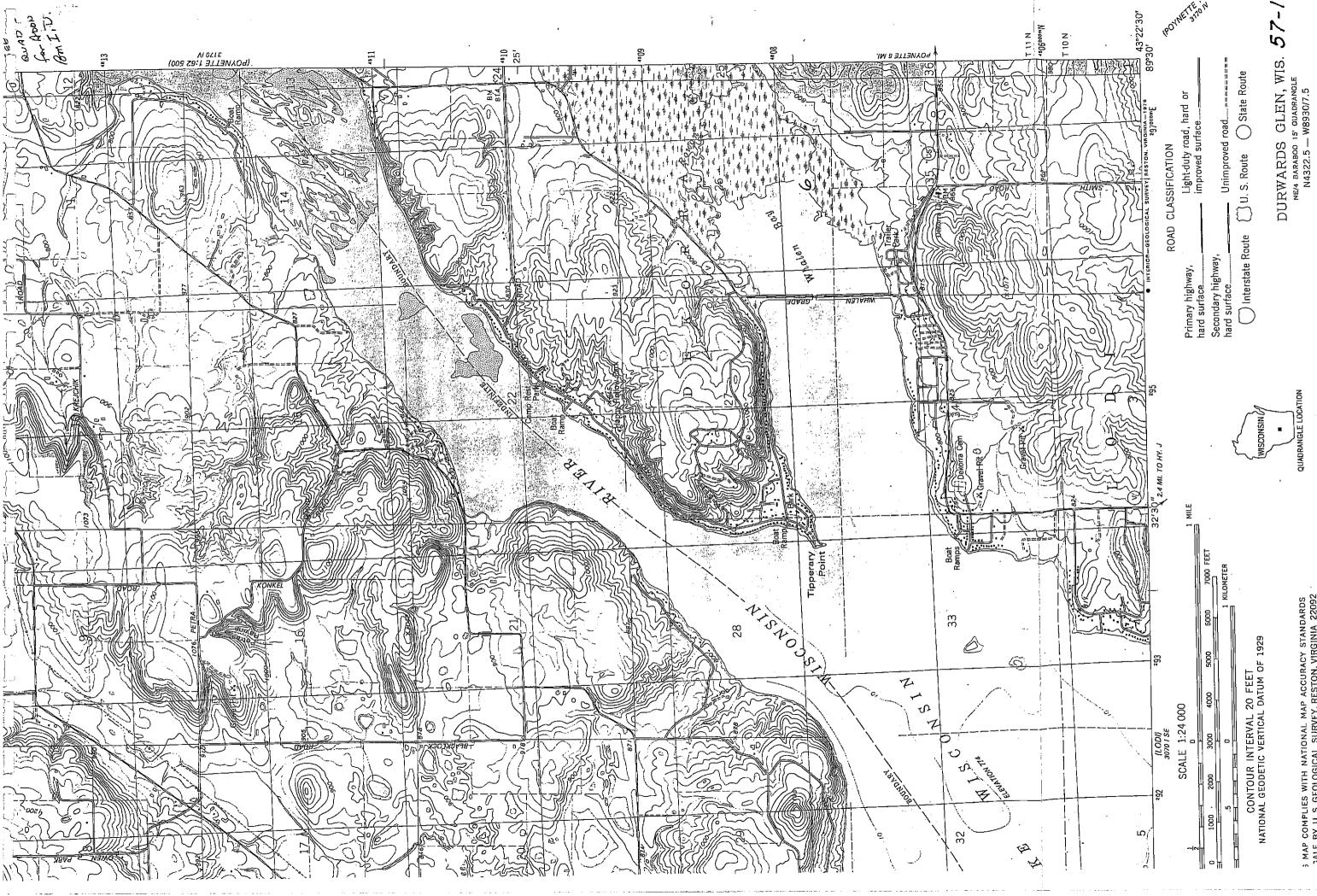
Jerry A. Foelimi Registered Professional Engineer General Engineering Co., Inc. Page 2 November 10, 1998

JAF/jcs

Enclosures

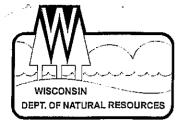
Graham Counihan, N3333 County J, Poynette cc: Robert Blosser, N9242 County CS, Poynette William Spahn, II, c/o Subway, W9195 County CS, Poynette Jeff Wendt, N3427 County J, Poynette Paul Black, W9624 Black Road, Poynette Michael Dorshorst, W8761 Bilke Road, Poynette Beverly Trafficante, N3352 Bear Trail, Poynette Tim Kasprzak, N4006 Keebough Road, Poynette Randy Crawford, W7790 Phillips Rd., Poynette Scott VanEtten, N3805 County Rd. J., Poynette Bill Booth, Mead & Hunt David Simon, DOT Tom Gilbert, DNR Nasrin Mohajerani, DNR, Water Quality Section Hugh Wilson, Dekorra Sanitary District No. 2 Marty Schmidt, Dekorra Sanitary District No. 1





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State of Wisconsin \ DEPARTMENT Or NATURAL RESOURCES

Tommy G. Thompson, Governor George E. Meyer, Secretary

101 S. Webster St. Box 7921 Madison, Wisconsin 53707-7921 Telephone 608-266-2621 FAX 608-267-3579 TDD 608-267-6897

March 17, 1999

IN REPLY REFER TO: 3420

Mr. Jerry Foellmi, P.E. General Engineering Company, Inc. 412 East Slifer Street P.O. Box 340 Portage, WI 53901

Subject: Recommended Effluent Limitations for Wastewater Treatment Facilities Planning -

Dekorra Sanitary District

Dear Mr. Foellmi:

This transmittal is in response to your request for assessment of the recommended conventional planning effluent limitations for a potential surface water discharge by the Dekorra Sanitary District(s). The six (6) tables in the attached memo indicate what the applicable effluent limitations would be for that particular site. Needless to say, the proposed Wisconsin River discharge site has the least restrictive limitations. However, beware that it still may be difficult to have a surface water discharge at this location approved due to the potential adverse impacts attributed to a "new" phosphorus input.

The recommended effluent limitations are based on the projected 20-year design average annual flowrate of either 150,000 or 300,00 gallons per day and applicable background stream flow/classification of that particular discharge site. Please note that the this determination addresses limitations for the so-called "conventional" pollutants and chlorine and chlorides. The possibility exists that additional effluent limitations for toxic pollutants may be included in future WPDES permit reissuances for Dekorra sanitary District if deemed necessary.

If you have any questions regarding the attached recommended facility planning effluent limitations, please contact Nasrin Mohajerani (608) 275-3239 or myself at (608) 264-6129.

Sincerely.

Bernie C. Robertson, P.E.

Bureau of Watershed Management

W/o attachment

Cc: George Osipoff - SCR/Fitchburg

Nasrin Mohajerani - SCR/Fitchburg



CORRESPONDENCE / MEMORANDUM

STATE OF WISCONSIN

DATE:

February 10, 1999

FILE REF: 3200

TO:

Tom Gilbert - WT/2

FROM:

Lee Liebenstein - WT/2

SUBJECT:

Effluent Limitations for Facility Planning Purposes at the Dekorra Utility District No.

1 in Columbia County.

This is in response to your request for an evaluation of the water quality-based effluent limitations for conventional pollutants as well as pH, ammonia nitrogen, chlorine and phosphorus for facility planning purposes at Dekorra . This is a proposed new discharge of treated effluent to the Lake Wisconsin Watershed (LW-19) in the Lower Wisconsin River Basin. Dekorra Utility District is proposing to discharge to one of the eight (8) selected sites in Columbia County (see attached map). The proposed site locations are listed in the discussion section of this report.

The proposed discharge is for continuous discharge with two different potential design flows (annual avg. flow) of 0.15 mgd and 0.3 mgd. Limitations were developed for new discharge to the selected sites, using provisions of chapters NR 102, 103, 104, 105, 106, 207, 210 and 217 of the Wisconsin Administrative Code.

The following two sets of limitations are calculated, based on the full assimilative capacity of the receiving water and to prevent the significant lowering of water quality (SLOWQ) for the projected effluent discharge from the Dekorra Utility District's treatment plant to the selected site.

Table 1. RECOMMENDED EFFLUENT LIMITATIONS FOR DISCHARGE OF 0.15 or 0.3 mgd Site(s) # 2 and 2A (Wisconsin River) **Effluent Limitations Based on Effluent Limitations** Parameter **Full Assimilative Capacity** to Prevent the SLOWQ BOD5 & TSS 45 mg/L - weekly avg. Summer & 45 mg/L - weekly avg. 30 mg/L - monthly avg. 30 mg/L - monthly avg. Winter Ammonia: Limit is not needed Limit is not needed Summer Winter 1 mg/L - monthly avg. 1 mg/L - monthly avg. **Phosphorus** 6.0 s.u. - daily min. 6.0 s.u. - daily min. Hq 9.0 s.u. - daily max. 9.0 s.u. - daily max. 400/100 ml - monthly avg. 400/100 ml - monthly avg. Fecal Coliform 38 ug/L - daily max. 38 ug/L - daily max. Chlorine 0.15 MGD flow: 0.048 lbs/d - daily max. 0.15 MGD flow: 0.048 lbs/d - daily max. 0.3 MGD flow: 0.095 lbs/d - daily max. 0.3 MGD flow: 0.095 lbs/d - daily max.

Table 2. RECOMMENDED EFFLUENT LIMITATIONS FOR Site # 1A (Wetland)

Discharge to this site is not recommended. This is a small stream that originates out of a wetland complex located in section 18 of Dekorra Township. The stream at this site has no visible flow and during the summer months exhibits back water characteristics. (Michael Sorge Water Quality Biologist – SCR recommendation after a site visit on January 9th, 1999)

Table 2A. RECOMMENDED EFFLUENT LIMITATIONS FOR WETLAND AREA DISCHARGES (Sites #5 and #6)

Due to existence of other alternative discharge locations, discharge to wetlands are not recommended

Table	Table 3. RECOMMENDED EFFLUENT LIMITATIONS (Site # 3, Rowan Creek) Effluent Flow = 0.15 mgd					
Parameter	Effluent Limitations Based on Full Assimilative Capacity	Effluent Limitations to Prevent the SLOWQ				
BOD ₅ &TSS Summer Winter	39 mg/L - weekly avg. & 30 mg/L -monthly avg. 45 mg/L - weekly avg. & 30 mg/L -monthly avg.	13 mg/L - weekly avg. 27 mg/L - weekly avg.				
Ammonia: Summer Winter	2.3 mg/L – weekly avg. 26 mg/L - weekly avg.	0.75 mg/L – weekly avg. 8.6 mg/L – weekly avg.				
Phosphorus pH	1 mg/L - monthly avg. 6.0 s.u daily min. 9.0 s.u daily max.	1 mg/L – monthly avg. 6.0 s.u. – daily min. 9.0 s.u. – daily max.				
Fecal Coliform Chloride	400/100 ml Monitoring only	400/100 ml Monitoring only				
Chlorine	38 ug/L (0.048 lbs/d) - daily max. 36 ug/L (0.045 lbs/d) - weekly avg.	38 ug/L (0.048 lbs/d) - daily max. 12 ug/L (0.015 lbs/d) - weekly avg.				

Table -	Table 4. RECOMMENDED EFFLUENT LIMITATIONS (Site # 3, Rowan Creek) Effluent Flow = 0.3 mgd					
Parameter	Effluent Limitations Based on Full Assimilative Capacity	Effluent Limitations To Prevent the SLOWQ				
BOD ₅ &TSS						
Summer	21 mg/L - weekly avg. & 30 mg/L -monthly avg.	BODs: 7 mg/L - weekly avg.				
		TSS: 10 mg/L - weekly avg				
Winter	44 mg/L - weekly avg. & 30 mg/L -monthly avg.	BOD ₅ & TSS: 15 mg/L - wkly avg.				
Ammonia:						
Summer	1.2 mg/L – weekly avg.	0.7 mg/L - weekly avg.				
Winter	14 mg/L - weekly avg.	4.7 mg/L – weekly avg.				
Phosphorus	1 mg/L – monthly avg.	1 mg/L – monthly avg.				
pН	6.0 s.u daily min.	6.0 s.u. – daily min.				
	9.0 s.u daily max.	9.0 s.u. – daily max.				
Fecal Coliform	400/100 ml	400/100 mL				
Chloride	Monitoring only	Monitoring only				
Chlorine	38 ug/L (0.095 lbs/d) - daily max.	38 ug/L (0.095 lbs/d) - daily max.				
	22 ug/L(0.055 lbs/d) - weekly avg.	7.3 ug/L(0.018 lbs/d) - weekly avg.				

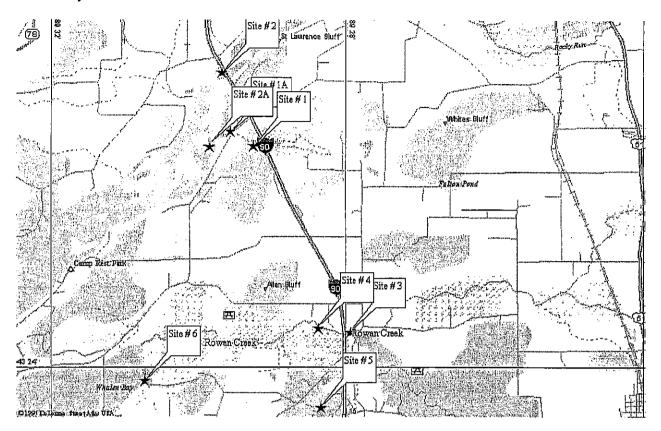
Table	Table 5. RECOMMENDED EFFLUENT LIMITATIONS (Site # 4, Rowan Creek) Effluent Flow = 0.15 mgd					
Parameter	Effluent Limitations Based on Full Assimilative Capacity	Effluent Limitations to Prevent the SLOWQ				
BOD ₅ &TSS Summer Winter	40 mg/L - weekly avg. & 30 mg/L -monthly avg. 45 mg/L - weekly avg. & 30 mg/L -monthly avg.	13 mg/L - weekly avg. 28 mg/L - weekly avg.				
Ammonia: Summer Winter Phosphorus	2.3 mg/L - weekly avg. 26 mg/L - weekly avg. 1 mg/L - monthly avg.	0.75 mg/L – weekly avg. 8.6 mg/L – weekly avg. 1 mg/L – monthly avg.				
pН	6.0 s.u daily min. 9.0 s.u daily max.	6.0 s.u. – daily min. 9.0 s.u. – daily max.				
Fecal Coliform	400/100 ml	400/100 ml				
Chloride	Monitoring only	Monitoring only				
Chlorine	38 ug/L (0.048 lbs/d) - daily max. 37 ug/L (0.046 lbs/d) - weekly avg.	38 ug/L (0.048 lbs/d) - daily max. 12 ug/L (0.015 lbs/d) - weekly avg.				

Tab	Table 6. RECOMMENDED EFFLUENT LIMITATIONS (# 4, Rowan Creek) Effluent Flow = 0.30 mgd					
Parameter	Effluent Limitations Based on Full Assimilative Capacity	Effluent Limitations to Prevent the SLOWQ				
BOD ₅ &TSS						
Summer	21 mg/L - weekly avg.	BODs: 7 mg/L - weekly avg. TSS: 10 mg/L - weekly avg				
Winter	44 mg/L - weekly avg. & 30 mg/L -monthly avg.	BODs & TSS:15 mg/L - weekly avg.				
Ammonia:						
Summer	1.2 mg/L – weekly avg.	0.7 mg/L - weekly avg.				
Winter	14 mg/L - weekly avg.	4.7 mg/L – weekly avg.				
Phosphorus	1 mg/L – monthly avg.	1 mg/L - monthly avg.				
pH	6.0 s.u daily min.	6.0 s.u. – daily min.				
	9.0 s.u daily max.	9.0 s.u. – daily max.				
Fecal Coliform	400/100 ml	400/100 ml				
Chloride	Monitoring only	Monitoring only				
Chlorine	38 ug/L (0.095 lbs/d) - daily max. 22 ug/L(0.055 lbs/d) - weekly avg.	38 ug/L(0.095 lbs/d) - daily max. 7.3 ug/L (0.018 lbs/d) - weekly avg.				

General Information:

The Dekorra Utility District is in the process of facility Planning with potential design flows of 0.15 mgd and 0.3 mgd. The wastewater treatment plant could potentially serve Dekorra's Utility District No. 1, DOT rest areas to the north, future developments around the Utility District No. 1 and No. 2. The proposed discharge is for continuous discharge to one of the selected sites either to the

Wisconsin River, Rowan Creek or wetland. Wisconsin River is classified as a warm water sportfish community and Rowan Creek is classified as a cold water stream.



General Procedures for Establishing Effluent Limitations

Based on the stream classification, the following water quality criteria are applicable for the purposes of this review:

WATER QUALITY CRITERIA		
Substance	Warm water	Cold water
Dissolved Oxygen	5 mg/L	6 mg/L
Ammonia Nitrogen (Un-ionized)	0.04 mg/L chronic	0.016 mg/L chronic
pH (daily range)	6.0 - 9.0 s.u.	6.0 - 9.0 s.u.
Total Residual Chlorine	19.03 ug/L acute,	19.03 ug/L acute,
	7.28 ug/L chronic	7.28 ug/L chronic

Summary of effluent and receiving water data used in calculating water quality-based effluent limitations:

Effluent flow	0.15 MGD /(0.30 MGD
Receiving water flow (Q7,10)	3.71 cfs for Rowan Creek (at Site 3),
	3.74 cfs for Rowan Creek (at Site 4),
	2100 cfs for Wisconsin River (from USGS)
Default Values*	
Temperature	Summer 25° C, Winter 3° C
NH3-N	Summer 0.06 mg/L, Winter 0.07 mg/L
pH*	Summer 8.21 s.u., Winter 7.97 s.u.
pH* for impoundment	Summer 8.73 s.u., Winter 8.50 s.u.

^{* -} From the Department's ammonia workgroup (report date: August 10, 1994) for hardness > 100 ppm

The Q7,10 used in the calculations of limitations is determined by using Lower Wisconsin River basin gage sites near the proposed location of outfalls and also by calculating drainage area by planimeter and using the regression equation to find the low flow by Susan Josheff, Watershed Management Engineer at SCR – DNR.

BOD5:

In establishing BOD5 limitations based on water quality standards the following formula was used.

BOD₅ = { (2.4) (DO) (Qe + Q7,10) (0.967)(T-24) } / Qe where:

DO = The decrease in DO (mg/L) (2 mg/L in warm water)
Qe = The effluent design flow (mgd) (converted to cfs)

Q7,10 = The receiving water Q7,10 (cfs)
T = The receiving water temperature (C)

Weekly average limitations are calculated based on 26 pounds of BOD discharged per cfs of flow (after mixing) in order to produce an edge-of mixing-zone decrease of 2 mg/L DO at a temperature of 24° C (75° F). Corrections to the formula are necessary at different temperatures and/or to account for different DO decreases. A decrease from an assumed background concentration of 7 mg/L DO to the 5 mg/L warm water standard equals the 2 mg/L decrease mentioned earlier. The highest limits given for BOD5 are 30 mg/L monthly average and 45 mg/L weekly average based on ch. NR 210, while the lowest limits given are 5 mg/L summer and 10 mg/L winter (both as weekly averages).

TSS:

The suspended solids limitations are primarily given to maintain or improve water clarity, and are not water-quality based. Normally suspended solids limitations are thus established the same as the BOD5 limitations in accordance with s. NR 102.04 to prevent objectionable deposits on shores or beds of receiving waters. Although the Department normally recommends that the TSS limits be set equal to the recommended BOD limits for discharges with water quality-based limits, however, if the BOD limits are less than 10 mg/L it is recommended that TSS limit not to be set lower than 10 mg/L monthly average for the entire year.

pH:

The pH requirement is required under s. NR 102.04(4)(c) where the effluent pH cannot change the ambient pH range by 0.5 units or be outside the range of 6.0 - 9.0 s.u.. Therefore, a daily pH range of 6.0 - 9.0 s.u. is recommended.

AMMONIA NITROGEN:

The existing procedure for calculating effluent limitations for ammonia is based on the application of an in-stream un-ionized ammonia nitrogen (NH₃-N) criterion of 0.04 mg/L after mixing in the receiving water taking into account background pH levels and background river temperatures, each of which influence the criterion. The general calculation procedure and information is summarized below:

In establishing ammonia nitrogen limitations where daily variables are used, the daily percent of unionized ammonia has to be determined.

To determine the percent of total ammonia the following equations are used:

NH3-N = 1 / 1 + 10(pka-pH)

Where: pka = 0.09018 + 2729.92 / T

T = Temperature © + 273.2 Receiving water temperature:

 $\% NH_3-N = Percent of the total NH_3-N in the un-ionized form The total NH_3-N concentration is then equal to the appropriate un-ionized NH_3-N criterion divided by the <math>\% NH_3-N$.

In establishing ammonia effluent limitations the daily percent of unionized ammonia is calculated and a background pH is determined. The receiving water temperature is also used. Establishing these appropriate background concentrations is a critical step. Once the total allowable ammonia is determined, then a mass balance is used to determine the appropriate effluent limitation.

With this determined and the receiving water temperature measured, the formulas used to determine the fraction of the total NH₃-N are applied resulting in total allowable NH₃-N values for use in the equations.

To determine the chronic effluent limitation on any given day, a mass balance of the receiving water input parameters and effluent parameters is calculated. The mass balance calculation includes input parameters such as allowable dilution, background concentrations, and total allowable ammonia to determine the final effluent limitation. The mass balance equation is as follows:

NH3 - N_(effluent) = $Q_{(mix)} * NH3-N_{(total allowable ammonia)} - Q_{(receiving water)} * NH3-N_{(receiving water)}$ $Q_{(effluent)}$

where:

 $NH3-N_{(effluent)} = Final limitation$

NH3-N(receiving water) = Background concentration

NH3-N(total allowable ammonia) = Total allowable NH3-N

 $Q_{(mix)} = Q_{(receiving water)} + Q_{(effluent)}$

Q(receiving water) = Allowable dilution

Q(effluent) = Effluent flow

The lowest ammonia limits currently given are 0.7 mg/L summer and 1.4 mg/L winter (both as weekly averages) based on the interim ammonia guidance. If the calculated ammonia limits exceed 20 mg/L summer or 40 mg/L winter, no limits are typically recommended in permits since it is expected that secondary treatment plants will be able to achieve those concentrations without additional treatment.

NOTE: The Department is currently in the process of revising its water quality criteria and implementation procedures for ammonia, with final code revisions expected by the end of 1999. It may be necessary to revise limits based on the above calculations after the new standards are promulgated.

Chlorine:

Disinfection of discharges to fish and aquatic life waters is required from May 1 to September 30 annually to protect recreational uses pursuant to s. NR 210.06 (1)(a). If chlorine is used for disinfection during that time, effluent limitations are recommended based on the water quality criteria in ch. NR 105 and the implementation procedures in ch. NR 106. Acute and chronic toxicity criteria

are available in ch. NR 105 for warm water sportfish communities, those criteria are 19.03 and 7.28 ug/L, respectively.

Using ch. NR 106, daily maximum limitations for residual chlorine are equal to twice the acute toxicity criteria, while weekly average limitations are calculated using the following formula:

Limitation =
$$\underline{\text{(WQC) (Qs + (1-f)Qe) - (Qs -fQe)(Cs)}}$$

Qe

Where:

Limitation = Water quality based effluent limitation (in ug/L)

WQC = The applicable water quality criterion (7.28 ug/L)

Qs = Receiving water flow (Q7,10, cfs)

Oe = Effluent flow

f = Fraction of the effluent flow that is withdrawn from the receiving water(zero)

Cs = Background concentration of the substance (in ug/L) as specified in s. NR 106.06 (3)(e). Since chlorine is not a naturally occurring or a persistent substance in the environment, the background concentration is assumed to be zero.

Antidegradation Procedure (for BODs, ammonia, and chlorine limits):

The above calculations show the effluent concentrations based on full assimilative capacity of the stream. However, since this is new discharge to surface water, a NR 207 review is required. The fish and aquatic life procedures found in s. NR 207.04 were used for evaluation of the proposed new discharge. The following calculates the allowable loading to be discharged without a significant lowering of water quality as defined by s. NR 207.05.

 $M(SLOWQ) = \{M(full) - M(existing)\} / 3 + M(existing)$

Where:

M(SLOWQ) = Allowable mass discharge without a significant lowering of water quality,

M(full) = Total assimilative capacity

M(existing) = Existing allowable mass loading to the receiving stream

Phosphorus:

Chapter NR 217 of the Wisconsin Administrative Code has been promulgated to address point sources of phosphorus to surface waters. The code limits municipal dischargers of more than 150 pounds of phosphorus per month to 1 mg/L total phosphorus limitation. Generally, it is anticipated that a municipal treatment plant discharging more than 150,000 gpd will be discharging more than 150 pounds of phosphorus a month. Since the wet weather design flow is above 150,000 gpd it is expected that the proposed discharge would result in 150 or more lbs/month of phosphorus being discharge to the surface water. Therefore, 1.0 mg/L phosphorus limitation is recommended.

Also, water quality-based phosphorus standards are currently under development, which may result in a phosphorus effluent limitation lower than 1 mg/L. Therefore, the facility should be designed in a manner, which would allow for future changes to meet a phosphorus effluent limitation at or below 1 mg/L.

Site 1, 5 and 6: Discharge to wetland area

These three (3) proposed discharge sites are to a wetland. Site # 1 is located in the NE 1/4 of section 13 T11N, R-E north of existing interstate wayside park. Site # 5 is located west of I90/94 and east of

Whalen Bay in Section 25 or 30, T11N, R-E. Site # 6 is located south east of Whalen Bay. These sites should be evaluated under ch. NR 103 if the other discharge sites do not exist and there are no feasible alternatives. However, due to the availability of better alternative sites, discharges to any of the wetlands are not recommended.

Site 3: Discharge to Rowan Creek

The proposed outfall location is in Rowan Creek between I90/94 and CTH J at NE ¼ of Section 30, T11N-R9E.

BODs and TSS Limitations:

The following table summarizes the effluent and receiving water data used in calculating the effluent limitations for BOD5 for full assimilative capacity.

BOD5 LIMIT CALCULATIONS (26 LB RULE	E) S	ite#3 D	ekorra	
RECEIVING WATER: Rowan	ı Crk		**********	
PROPOSED DESIGN FLOW (MGD)	0.15	0.15	0.3	0.3
RIVER FLOW 7Q10 (cfs)	3.71	3.71	3.71	3.71
RIVER TEMPERATURE	25	3	25	3
EFFLUENT DO (mg/L)	7	7	7	7
BACKGROUND DO (mg/L)	7	7	7	7
MIX DO (mg/L)	7	. 7	. 7	7
DO CRITERION (mg/L)	6	6	6	6
BOD5 Concentration Limits (mg/L)	39.3	82.3	20.8	43.6
Mass (lbs/d)	49.219998	102.98149	52.123318	109.05602
Mass = (Design flow)(BOD5)(8.34)				
BOD5 (mg/L) = 2.4(DObg-DOcr)[a](0.9)	967^(T-24)			

Where: a = (Q7, 10(0.645) + Qd)f/Qdf

The above calculations show the effluent concentrations based on full assimilative capacity of the stream.

The following calculates the allowable BOD₅ to be discharged without a significant lowering of water quality as defined by s. NR 207.05.

```
M(full)summer = 39.3 mg/L x 0.15 MGD x 8.34 lbs/gal = 49.22 lbs/d
M(full) winter = 82.3 mg/L x 0.15 MGD x 8.34 lbs/gal = 103 lbs/d
```

M(existing)summer & winter = 0 lbs/d [new discharge]

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M(SLOWQ)summer = 49.2 / 3 = 16.4 lbs/d
M(SLOWQ)winter = 103 / 3 = 34.3 lbs/d
```

The following calculates equivalent concentration limits for BOD5 based on the above SLOWQ mass limitations.

$$16.4 \text{ lbs/d} / (0.15 \text{ MGD x } 8.34 \text{ lbs/gal}) = 13.4 \text{ mg/L}$$

 $34.3 \text{ lbs/d} / (0.15 \text{ MGD x } 8.34 \text{ lbs/gal}) = 27.4 \text{ mg/L}$

RECOMMENDED BOD₅ LIMITATIONS: Based on our review, the calculated BOD₅ limits to prevent the significant lowering of water quality are 13.4 mg/L for summer and 27.4 mg/L for winter for the discharge rate of 0.15 MGD. Therefore, it is recommended that a weekly average BOD₅ limit of 13 mg/L for summer and 27 mg/L (rounded) for winter based on 1/3 of the assimilative capacity be considered for facility planning.

If the permittee is able to demonstrate that it meets the requirements of s. NR 207.04(1)(d), then the limitations based on full assimilative capacity of 39 mg/L weekly average for the summer and 45 mg/L weekly average for the winter may be given. A 30 mg/L monthly average would also be included in the full capacity situations since that is the technology-based limit in ch. NR 210. The permittee is required to make several demonstrations in s. NR 207.04(1)(d) in order to obtain limits based on full capacity.

At a discharge rate of 0.3 MGD, the weekly average limits based on significant lowering of water quality are 7 mg/L summer and 15 mg/L winter. The limits based on full assimilative capacity are 21 mg/L weekly average in summer, while the winter limits are 30 mg/L monthly average and 44 mg/L weekly average.

Ammonia Limitations Based on Chronic Toxicity

The following table summarizes the effluent and receiving water data used in calculating the effluent limitations for ammonia for total assimilative capacity.

AMMONIA LIMIT CALCULATIONS	DI	EKORRA # 3 OPTION				
Input Parameters:		Output Parameter	's:		 	
EFFLUENT FLOW (mgd) =	0.150 / 0.30		SUMMER	WINTER	SUMMER	WINTER
MAX. EFFL. pH =	9.00					
	-	Background pH	8.21	7.97	 	
RIVER 7010 (cfs) =	3.71			7	 	
BACKGROUND NH3-N:		PKa =	9.24	9.97	 	
Summer	0.06				 	
Winter	0.12	MIX NH3-N =	0.19	1.63		
BACKGROUND pH:					<u> </u>	
Summer	8.21	NH3-N LIMIT:	For 0.15 mgd		For O	.3 mgd
Winter	7.97					
RIVER TEMPERATURE (C):		Mg/L	2.26	25.77	1.22	13.70
Summer	25.00					<u> </u>
Winter	3.00	Lb/d	2,82	32,24	3.06	34,28
UN-IONIZED					 -	
NH3-N CRITERION (mg/L) =	0.016					

The above calculations are based on full assimilative capacity.

At the discharge location, the assimilative capacity is evaluated in terms of ch. NR 207. The following table shows the calculated allowable NH3-N to be discharged without a significant lowering of water quality as defined by s. NR 207.05.

M(full)summer = 2.3 mg/L x 0.15 MGD x 8.34 lbs/gal = 2.82 lbs/d M(full)winter = 25.77 mg/L x 0.15 MGD x 8.34 lbs/gal = 32.24 lbs/d

M(existing)summer & winter = 0 lbs/d (new discharge)

M(SLOWQ)summer = 2.82/3 = 0.94 lbs/d M(SLOWQ)winter = 32.24/3 = 10.74 lbs/d

The following calculate an equivalent concentration limit for ammonia based on the above SLOWQ mass limitations.

0.94 lbs/d / (0.15 MGD x 8.34 lbs/gal) = 0.75 mg/L10.74 lbs/d / (0.15 MGD x 8.34 lbs/gal) = 8.6 mg/L

RECOMMENDED AMMONIA LIMITATIONS: In order to protect against significant lowering of water quality in Rowan Creek, weekly average ammonia limitations of 0.75 mg/L for summer and 8.6 mg/L for winter are recommended for a proposed design flow of 0.15 MGD. At a design flow of 0.3 MGD, the limits would be 0.7 mg/L summer and 4.7 mg/L winter. However, if the permittee were able to make a successful demonstration of need according to s. NR 207.04(1)(d), weekly average limitations would be based on full assimilative capacity. Those limits would be 2.3 mg/L summer and 26 mg/L winter at 0.15 MGD, and 1.2 mg/L summer and 14 mg/L winter at 0.3 MGD.

RECOMMENDED CHLORINE LIMITATIONS:

Chlorine is of potential water quality concern if it is used to satisfy disinfection requirements. Using the procedures mentioned earlier in this report for calculating chlorine limitations, it is recommended that a 38 ug/L daily maximum and 36 ug/L weekly average for discharge of 0.15 mgd and 38 ug/L daily maximum and 22 ug/L weekly average (all rounded) for discharge of 0.3 mgd be included for full assimilative capacity and 38 ug/L daily maximum and 12 ug/L and 7.3 ug/L weekly average based on preventing the SLOWQ.

Site 4: Discharge to Rowan Creek

We used the same procedure as Site # 3 to calculate the limitations for the discharge of 0.15 / 0.3 mgd. The only difference is that the receiving water flow is slightly higher.

			T	Douge Cak
BOD LIMIT CALCULATIONS (26 LB RULE)	#	4 De	ekorra To	Kowali Cik
RECEIVING WATER: Rowan Crk				
			2.7	
PROPOSED DESIGN FLOW (MGD)	0.15	0.15	0.3	0.3
RIVER FLOW 7010 (cfs)	3.74	3.74	3.74	3.74
RIVER TEMPERATURE	25	3	25	3
EFFLUENT DO (mg/L)	7	7	7	7
BACKGROUND DO (mg/L)	7	7	7	7
MIX DD (mg/L)	7	7	7	7
DO CRITERION (mg/L)	6	6	6	6
BOD5 Concentration Limits (mg/L)	39.6	82.9	21.0	43.9
	49.594526	103.7651	52,497847	109.83963
Mass (lbs/d)	47.174120	1 50 11 501)L.47 07	,0,105,05
Mass = $(Design flow)(BOD5)(8.34)$				
BOD5 (mg/L) = 2.4(DObg-DOcr)[a](0.967^(T-	-24) =			

Where: a = (Q7, 10(0.645) + Qd)f/Qdf

RECOMMENDED BOD₅ LIMITATIONS: Based on our review, the calculated BOD₅ limits to prevent the lowering of water quality are 13 mg/L for summer and 28 mg/L for winter (at 0.15 MGD) and 7 mg/L for summer and 15 mg/L for winter (at 0.3 MGD) weekly average. Therefore, it is

recommended that a weekly average BOD_5 limit of 13 mg/L for summer and 28 mg/L for winter and 7 mg/L (summer) and 15 mg/L (winter)(rounded) based on 1/3 of the assimilative capacity be considered for facility planning.

If the permittee is able to demonstrate that it meets the requirements of s. NR 207.04(1)(d), then the limitations based on full assimilative capacity of 39 mg/L weekly average for the summer and 45 mg/L for the winter may be given at 0.15 MGD. At 0.3 MGD, the limits would be 21 mg/L summer and 44 mg/L winter as weekly averages. At both flows, a 30 mg/L monthly average would also be included during the winter based on full assimilative capacity.

Ammonia Limitations Based on Chronic Toxicity

The following table summarizes the effluent and receiving water data used in calculating the effluent limitations for ammonia for total assimilative capacity.

AMMONIA LIMIT CALCULATIONS	3	DEKORRA # 4	OPTION			
Input Parameters:		Output Parameter	s:			
EFFLUENT FLOW (mgd) =	0.150 /0.30		SUMMER	WINTER	SUMMER	WINTER
MAX. EFFL. pH =	9.00					
		Background pH	8.21	7.97	 	
RIVER 7010 (cfs) =	3.74				· · · · · · · · · · · · · · · · · · ·	
BACKGROUND NH3-N:		PKa ≃	9.24	9.97		
Summer	0.06				 	
Winter	0.12	MIX NH3-N =	0.19	1.63		
BACKGROUND pH:				·		
Summer	8.21	NH3-N LIMIT:	For 0.15 mg/d		For 0.3	l B mgd
Winter	7.97					<u> </u>
RIVER TEMPERATURE (C):		Mg/L	2.27	25.97	1.23	13.80
Summer	25.00					
Winter	3.00	Lb/d	2.84	32.49	3.06	34.28
UN-IONIZED					 	
NH3-N CRITERION (mg/L) =	0.016			 · <u></u> -	 	

RECOMMENDED AMMONIA LIMITATIONS: In order to protect against lowering of water quality in Rowan Creek, weekly average ammonia limitations of 0.75 mg/L for summer and 8.6 mg/L for winter (Qe = 0.15 mgd) and 0.7 mg/L and 4.7 mg/L weekly average (Qe = 0.3 mgd) are recommended. However, if the permittee were able to make a successful demonstration of need according to s.NR 207.04, weekly average limitations would be based on full assimilative capacity

RECOMMENDED CHLORINE LIMITATIONS:

Chlorine is of potential water quality concern if it is used to satisfy disinfection requirements. Using the procedures mentioned earlier in this report for calculating chlorine limitations, it is recommended that a 38 ug/L daily maximum and 37 ug/L weekly average for discharge of 0.15 mgd and 38 ug/L daily maximum and 22 ug/L weekly average for discharge of 0.3 mgd be included for full assimilative capacity and 38 ug/L daily maximum and 12 ug/L and 7.3 ug/L weekly average based on preventing the SLOWQ.

If you have any questions or comments regarding the above recommendations, please contact either Nasrin Mohajerani at (608) 257-3239, or myself at (608) 266-0156.

PREPARED BY:

N. Mahaserani

Nasrin Mohajerani Water Resources Engineer

CC: Bob Weber - WT/2

Roger Schlesser - SCR Nasrin Mohajerani - SCR REVIEWED BY:

Water Resources Engineer

APPENDIX A-3

MEAD & HUNT SITE EVALUATION REPORT EXCERPTS

DEKORRA UTILITY DISTRICT NO. 1

Site Evaluation Report Rest Area 11 Project LD-1013-01-01 Lake Delton - Madison Road 190/94 Eastbound Columbia County

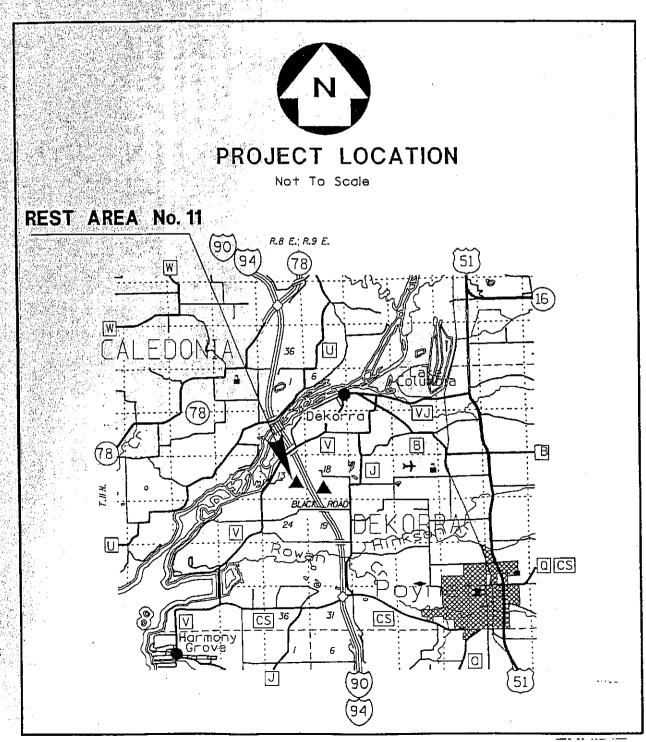
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MICAD & HUNT: Ing.

Lagureers – Architects Scientisk – Planners

Project I.D. 1013-01-01 REST AREA No. 11 (Eastbound) Lake Delton - Madison Road I-90/94 COLUMBIA COUNTY



C. Sewer Drainage Fields

Domestic wastewater generated at Rest Area No. 11 is currently treated and disposed of using an on-site subsurface system. The rest area is served by a 22,000 gallon septic tank, dosing chamber, distribution box, and two 160-foot by 200-foot infiltration drain fields. The system was designed for 22,000 gallons per day (gpd) and were constructed in 1983. A 1993 investigation into the operation of the existing sewer drain fields indicated a peak monthly average daily flow of 10,600 gpd at Rest Area No. 11. This investigation concluded that the existing sewer drain fields were functioning properly and included recommendations to modify operational procedures.

Field observations conducted by Mead & Hunt, and responses from maintenance personal during 1996, also indicated the sewer drain fields at this site were functioning properly with no visible signs of surface effluent or odors being generated.

VI. Deficiencies of the Existing Facility

A. Existing Site

1. Parking Capacity

The existing car parking lot fills to present capacity with additional cars parking on the shoulder of the parking area drive lane. This condition can be observed especially on peak weekend travel times or holidays.

The existing truck parking lot serves a steady stream of traffic daily and fills to present capacity by late afternoon. As the evening progresses, even more trucks will stop at the rest area and stay for longer periods of time. At night, trucks can be observed parked along ramps, shoulders, and in the car parking area.

2. Picnic Areas

Rest Area No. 11 currently has a picnic area that occupies 1.09 hectares (2.7 acres). Projections indicate that for the design year of 2023, 2.39 hectares (5.9 acres) will be required. The existing plaza area is flat and has poor drainage.

3. Pavement

The non-reinforced concrete pavement at Rest Area No. 11 is currently in fair condition. The pavement has been in service since 1978, and is showing some evidence of cracking, although not excessively. There were no problem areas with the concrete pavement observed during the site survey performed in the fall of 1996.

The asphaltic concrete pavement used for the paved portion of the shoulders is in poor condition. The asphalt pavement is 25 to 50 millimeters lower than the

concrete pavement along the shoulder joint. The edges of the asphalt pavement, where the asphalt joins the crushed aggregate shoulders, is not distinct and is crumbling. Evidence of deteriorating shoulders is most apparent along the truck parking lot and ramps.

4. Lighting

The design philosophy in 1978, when the existing site lighting was installed, was to have low level lighting for aesthetic purposes. Current site lighting design standards have placed more emphasis on security. The bright, evenly distributed light from high mast lighting provides this measure of security.

B. Building

The building deficiencies discovered are listed as follows:

- The existing number of fixtures is insufficient to serve current or projected user counts.
- There is no unisex assisted handicap toilet room.
- The toilet rooms are dark, small, and do not fully comply with current accessibility standards.
- The size of the toilet rooms (and spacing of the water closets) and the existing toilet stalls are insufficient to accommodate current program accessories (various dispensers/receptacles, baby changing tables, fold-down baby seats).
- Ventilation systems are very inadequate and do not meet current standards.
- The lobby has no air locks, has dark finishes, and only nominal natural light.
- There are no janitorial facilities on the main floor, and those in the basement are not accessible from inside the building.
- There are no power assisted accessible door operators.
- The existing solar collection system maintenance is increasing and parts are no longer available.
- Drainage away from the building is poor due to low setting on site. Water leaks into the basement through the electrical vault and conduit penetrations.

C. Sewer Drainage Fields

As previously discussed, the sewer drain field system at Rest Area No. 11 is currently functioning and is under capacity. However, the projected traffic volumes for this rest area through the year 2023 and the associated wastewater flows of 42,600 gpd (see Exhibit 3) can not be adequately handled by this

system. The existing sewer drain field system at Rest Area No.11 is deficient for the following reasons:

- Location of the drain fields are in conflict with the proposed design geometrics to accommodate future parking and ramp requirements.
- The septic tank, dosing chamber and drain field are undersized by approximately 70 to 94 percent when applying the projected (2023) maximum daily flow rate.
- Conversion from an automatic siphon to a pressurized distribution system is required to discharge effluent to the full area of the sewer drain fields.
- Only two (2) drain fields are utilized. A minimum of three (3) drain fields will be required per WisDOT design guidelines.

VII. Improvement Objectives

Several basic objectives were considered for the site layout alternatives. They are listed as follows:

Ramp Geometrics. Apply the current Facility Design Manual (FDM) standards to the new site to check if the design would safety exit traffic from the interstate, convey them to a parking stall, and safety return or re-enter traffic to the interstate.

Parking Lot Capacities. a) Size the truck parking lot to accommodate the 68 trucks that are projected for the design year, and b) Size the car parking lot to accommodate the 178 cars that are projected. Each row of car parking should be less than 75 cars. Maintain a 30-meter separation between the interstate and the parking lots to accommodate a future fourth lane.

<u>Picnic Area.</u> Projections indicate that the picnic area is to be increased from 1.09 hectares (2.7 acres) to 2.39 hectares (5.9 acres). The existing plaza is flat and drainage is a problem. Provide sufficient slope to the new picnic area for proper drainage.

Building. Position the building so that it is less than 23 meters (75 feet) from the handicap parking stalls. Curve parking lots around a centrally located building to minimize the walking distance to the building. Consider remodeling of the existing building. Increase the capacity of the facilities in the building while meeting current building code requirements.

Provide a Suitable Site for Sanitary Drain Fields. It is estimated that Rest Area No. 11 will require 3.735 hectares (9.23 acres) of level area for the construction of three (3) drain fields. An additional 9.23 acres have been reserved for three (3) additional drain fields. The beds should not be located in drainage ways, and must have suitable soils. The design objectives are to increase the capacity of the sanitary sewer service and to utilize recent technological advances.

Due to disproportionate expansion of the men's and women's rooms, one end of the building would be extended farther than the other. Removing existing fixtures to accomplish other goals offers the opportunity to reverse the men's and women's ends to minimize encroachment of the additions on the nearest adjacent parking lot.

The solar system was not considered worth rehabilitating or maintaining for the following reasons:

- Reached useful life
- Parts manufacturer out of business can not get parts/service
- Maintenance is increasing (seals deteriorating, etc.)
- Creating roof leaks
- Creating snow slides (safety issue)
- No mandates to incorporate or maintain solar.
- Actual benefits (energy savings vs. cost of upkeep) unsubstantiated.

Alternative N1

Construct a New Building

Alternative N1 (see Exhibit N1) was developed utilizing paired toilet room "modules" arranged to be at opposite sides of a central lobby, similar to the current facility. The resulting two entrances on opposite sides of the lobby accommodates a central location between truck and auto parking very effectively. Future expansion would involve lengthening the toilet rooms out at each end.

As a variation to Alternative N1, these same paired toilet room modules could instead be arranged to be side by side on the same side of a common lobby which has entrances on both ends. In the future, similar toilet room modules could be added on the opposite side of the lobby to provide expansion without creating excessively large individual toilet rooms.

Either arrangement would include a basement for mechanical equipment and underfloor plumbing access. Two exits will be required from the basement, with consideration given to ADA accessibility requirements.

Fire sprinklers may be required if the main floor area exceeds 10,000 square feet, depending on the construction type utilized. The occupancy falls under ILHR Chapter 54, and may qualify as a low hazard which would allow a windowless basement up to 3,000 square feet without fire sprinklers.

C. Sewer

The following alternatives were evaluated to provide treatment of domestic wastewater increases in conjunction with the general redesign and upgrading of Rest Area No. 11.

Alternative No. 1

Regional collection and treatment by a publicly owned treatment works (POTW).

This alternative involves sanitary sewer services provided by a municipality closest to Rest Area No. 11. The village of Poynette is approximately 4.0 miles from Rest Area No. 11 and would be capable of providing sanitary sewer service to the rest area with the following major components: 1) regional pump station, 2) 16,000 linear feet of force main, and 3) two-grinder pump stations interconnecting sewers between Rest Area Nos. 11 and 12, and a connection and service fee for discharging to the Poynette POTW.

Alternative No. 2

Expansion of the existing sewer drain field system

This alternative is the expansion of the existing sewer drain field system at Rest Area No. 11. The expansion design would be in accordance with the Wisconsin Administrative Code ILHR 83 and would involve the following major components: 1) septic tank replacement, 2) dosing chamber replacement, 3) primary screening chamber, and 4) 70 to 90 percent expansion of the existing drain fields.

Alternative No. 3

Construction of a new sewer drain field system

This alternative would involve the construction of a new sewer drain field system at Rest Area No. 11. The new design would be in accordance with the Wisconsin Administrative Code ILHR 83 and would have 100 percent area requirements for each "trench type" drain field. The major components of the new design are as follows: 1) primary screening chamber, 2) septic tank, 3) pressurized dosing chamber, 4) pump control panel, 5) distribution manhole, 6) pressure distribution piping, and 7) three trench type drain fields.

IX. Alternative Selection

A. Site Layout

Alternative No. 1

Alternative No. 1 was not selected because it fails to address any of the improvement objectives described in Section VII. The parking lots will remain under capacity, as will the existing picnic area. The poor drainage of the plaza will continue to be a problem. Crumbling shoulders will continue to deteriorate. The overcrowding of the parking lots will eventually stress the concrete pavement and shorten its service life.

Alternative No. 2

Alternative No. 2 was not selected because of the length of the parking lot. It was estimated that it would be a 310-meter (1,017-foot) walk from the far end of the parking lot to the building. The linear pattern of parking exceeds the design guideline

of 75 cars per row. Excessive speeds in the car parking area would be the result of such a long parking lot.

Alternative No. 3

Alternative No. 3 was not selected because the linear pattern of car parking exceeds the 75 car per row limit. While pedestrian traffic from the truck parking area would pass through the adjacent car parking lot with few difficulties, the pedestrian traffic with pets from the adjacent car parking lot would experience some difficulties negotiating moving truck traffic as they cross the truck lot to the pet walking area.

Alternative No. 4

Alternative No. 4 is the recommended site layout. Initial construction incorporates the existing car parking lot and picnic area into the design. This alternative, in its ultimate configuration, provides the capacity to park the full compliment of vehicles for both cars and trucks, and has the correct size for the picnic area. The compact nature of the three row, circulating car parking areas and the curved arrangement of the truck lot minimizes walking distances to the building. There would be separate pet walking areas for the car parking area and the truck parking area to avoid pedestrian mishaps. The building will be placed within 23 meters (75 feet) from the first row of car parking. Entrance and exit ramp geometry is conventional and conveys traffic directly to and from the parking lots.

B. Building

Alternatives R1 and R2

Remodel Alternatives R1 and R2 were not recommended. The existing building could be remodeled to meet minimum code requirements, however, some aspects of circulation, access, and function will be marginally provided for. For example:

- Lobby is relatively small.
- Toilet corridors are long and narrow with poor wheelchair turnaround and pass-by provisions.
- Visual screening at entries is imperfect, but limited by ADA clearances required.
- Plumbing access chase is minimal width.
- Plumbing projecting in chases will probably require extending building more to provide stairways that will meet code width requirements.

With the extent of expansion required, over 50 percent of the final building will be new construction, and the interior will essentially need to be gutted. The electrical, HVAC, and plumbing systems are 20+ years old and need such extensive changes that the most cost-effective option would be to completely remove them and start over. Even having

done that, the final product will be one forced to fit within the structure limitation of the remaining shell, rather than one with space arranged for the best functional layout. We anticipate that the ultimate net cost per square foot of the remodel would be approaching the cost of a new building, because of the extensive hand demolition and removal and reinstallation of new systems within the remaining existing building elements. Ultimately, the location of the existing building is incompatible with the site geometry required to effectively meet program needs.

Alternative No. NI

The new building Alternative N1 is the recommended alternative. Due to the extensive remodeling and the limitations associated with the existing building and the limitations the existing building would impose on the new site geometry, the most prudent and cost effective approach to increasing the rest area capacity and address program needs, is to construct a new rest area building at a location on the site to best accommodate other site development. A new building can provide the following benefits:

- A wider building to locate lavatories directly outside toilet stalls.
- Better accessibility (ILHR Chapter 69) to and inside toilet rooms.
- All new construction; no rework to match existing materials and systems.
- More site redevelopment options, particularly those which provide shorter or more central access from parking areas.
- A new building could be set higher to avoid existing drainage problems.
- Potential to use the existing building at least until a new building is ready for use.

C. Sewer Service

The three previously listed alternatives were evaluated for selection based on the following criteria: 1) capital cost, 2) annual cost, 3) ease of operation, 4) expandability, and 5) service life.

Alternative No. 1

Alternative No. 1, regional collection and treatment, is not recommended. The nearest POTW to Rest Area No. 11 is located approximately 4.0 miles southeast in the village of Poynette. Providing sewer service from Poynette would involve constructing a regional pump station and approximately 16,000 linear feet of force main. This pump station would be located at the northeast intersection of I-90 and CTH CS. The opinion of probable construction cost for the pump station and the force main is approximately \$600,000. This figure does not include the cost for interconnecting sewers between Rest Area Nos. 11 and No.12, sewer connection to the pump station, or the cost for connection and service fees for discharging to the Poynette POTW. Alternative No. 1

I. LIFE CYCLE COST ANALYSIS (LCCA) OF WASTEWATER TREATMENT ALTERNATIVES

A Economic Analysis

The opinion of probable construction costs for Alternative No.1, regional treatment and Alternative No.3, pressure drain field system are presented in Table 1. A site map of the sewer collection system for regional treatment at Poynette is shown in Exhibit #5. A 10% contingency is included for miscellaneous costs not included in the listed items. A conservative life cycle period of 20 years has been assumed for the drain fields. As a result, two drain fields will be replaced at each rest area within the 26 year project period. The cost for this replacement is based on 1997 dollars with an annual construction cost increase of 3.6%.

TABLE 1
OPINION OF PROBABLE CONSTRUCTION COSTS
WASTEWATER TREATMENT ALTERNATIVES

ITEM	ALTERNATIVE NO.1 (\$)	ALTERNATIVE NO.3 (\$)
Trench Drain fields (3)	An San San San San San San San San San Sa	946,625
Drain field Pump/Pipe System	E *4. 0	253,375
Sewer G.P. & Duplex P.S.	90,000	0
Sewer F.M. to CTH "CS"	376,600	0
Sewer Ext. To "CS"	600,000	. 0
Sewer Hook-Up Fee	669,220	0
Drain field Replac. (2017)	* / O	1,262,800
Subtotal	1,735,820	2,462,800
Contingency	173,580	246,280
Total	1,909,400	2,709,080

The annual operation and maintenance (O&M) costs for the two alternatives are presented in Table 2. These calculations are based on a labor rate of \$16.00 per hour, an electrical billing rate of \$0.06 per kilowatt-hour and the cost for septic tank pumping at each rest area once every two years. The volume charge is based on the 1995 rate of \$6.93 per 1,000 gallons, typical for domestic strength wastewater. The village of Poynette sewer user rate and hook up fee information has been provided by General Engineering Company Inc. and is attached to this Exhibit.

TABLE 2
ANNUAL OPERATION AND MAINTENANCE COSTS
FOR WASTEWATER TREATMENT ALTERNATIVES

TTEM ALTERN	NATIVE NO.1 (\$)	ALTERNATIVE NO.3 (\$)
Power	1,,500	950
Maintenance	400	200
Labor	3,300	1,650
Service Charge	26,400	0
Volume Charge	139,120	. 0
Total	170,720	2,800

The life cycle cost analysis (LCCA) of both alternatives is calculated in Table 3. The LCCA has been requested by WisDOT to evaluate the present worth cost to operate each alternative over a given time period and interest rate. This LCCA has been prepared using a design period from 1997 to 2023, or 26 years and an interest rate of 7.5%. The present worth factor for an annual cost under these conditions is 11.293.

TABLE 3

PRESENT WORTH ANALYSIS FOR
WASTEWATER TREATMENT ALTERNATIVES

ITEM ALTE	ERNATIVE NO.1 (\$)	ALTERNATIVE NO.3 (\$)
Capital Cost	1,909,400	2,709,080
Annual O & M	1,927,940	31,620
Total Present Worth Cost	3,837,340	2,740,700

The LCCA indicates that the cost to construct a regional sewer collection system to the village of Poynette, Alternative No.1, would be \$1,096,640 or approximately 40% more costly than the present worth of constructing Alternative No.3, a trench drain field system at both Rest Area No.11 and No. 12. As a result, Alternative No.3 would be the most cost-effective solution to provide wastewater treatment to both Rest Area No.11 and No.12.

Site Evaluation Report Rest Area 12 Project LD: 1013-01-02 Lake Delton - Madison Road 190/94 Westbound Columbia County

Wisconsin Department of Transportation
Central Office Design

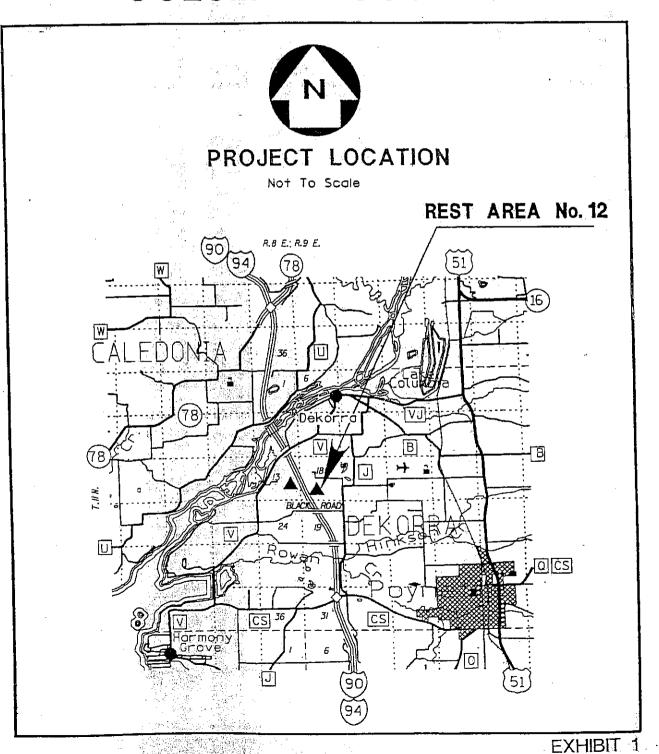
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Project I.D. 1013-01-02 REST AREA No. 12 (Westbound)

Lake Delton - Madison Road I-90/94 COLUMBIA COUNTY



The current facility houses a center lobby between a men's toilet room (4 toilets, 4 urinals, and 6 lavatories) and a women's toilet room (8 toilets and 6 lavatories). Each toilet room is split with an access control curtain to allow cleaning one-half of the room at a time.

A portion of the original exterior canopies have been enclosed to house maintenance equipment and supplies. The basement houses maintenance supplies and mechanical equipment, including a masonry heat storage vault associated with a roof top solar collection system, which is used to supplement the primary furnace and water heater.

C. Sewer Drainage Fields

Domestic wastewater generated at Rest Area No. 12 is currently treated and disposed of using an on-site subsurface system. The rest area is served by a 22,000 gallon septic tank, dosing chamber, distribution box, and two 160-foot by 200-foot infiltration drain fields. The system was designed for 22,000 gallons per day (gpd) and were constructed in 1983. A 1993 investigation into the operation of the existing sewer drain fields indicated a peak monthly average daily flow of 12,500 gpd at Rest Area No. 12. This investigation concluded that the existing sewer drain fields were functioning properly and included recommendations to modify operational procedures.

Field observations conducted by Mead & Hunt, and responses from maintenance personal during 1996 also indicated the sewer was functioning properly with no visible signs of surface effluent or odors being generated.

VI. Deficiencies of the Existing Facility

A. Existing Site

1. Parking Capacity

The existing car parking lot fills to present capacity with additional cars parking on the shoulder of the parking area drive lane. This condition can be observed especially on peak weekend travel times or holidays.

The existing truck parking lot serves a steady stream of traffic daily and fills to present capacity by late afternoon. As the evening progresses, even more trucks will stop at the rest area and stay for longer periods of time. At night, trucks can be observed parked along the ramp shoulders and in the car parking area.

2. Picnic Areas

Rest Area No. 12 currently has a picnic area that occupies 1.01 hectares (2.5 acres). Projections indicate that for the design year of 2022, 1.82 hectares (4.5 acres) will be required. The existing plaza is flat and has poor drainage.

- The existing solar collection system maintenance is increasing and parts are no longer available.
- Drainage away from the building is poor due to low setting on site. Water leaks into the basement through the electrical vault and conduit penetrations.

C. Sewer Drainage Fields

As previously discussed, the sewer drain field system at Rest Area No. 12 is currently functioning and is under capacity. However, the projected traffic volumes through the year 2023 and the associated wastewater flows of 37,400 gpd(see Exhibit 3), can not be adequately handled by this system. The existing sewer drain field system is deficient for the following reasons:

- Location of the drain field is in conflict with the proposed design geometrics to accommodate future parking and ramp requirements.
- The septic tank, dosing chamber and drain fields are undersized by approximately 70 to 94 percent when applying the projected (2023) maximum daily flow rate.
- Conversion from an automatic siphon to a pressurized distribution system is required to discharge effluent to the full area of the sewer drain fields.
- Only two (2) drain fields are utilized. A minimum of three (3) drain fields will be required per WisDOT design guidelines.

VII. Improvement Objectives

Several basic objectives were considered for the site layout alternatives. They are listed as follows:

Ramp Geometrics - Apply current Facility Design Manual (FDM) standards to the new site to check if the design would safely exit traffic from the interstate, convey them to a parking stall, and safely return or re-enter traffic to the interstate.

Parking Lot Capacities - a) Size the truck parking lot to accommodate the 63 trucks that are projected for the design year, and b) Size the car parking lot to accommodate the 137 cars that are projected. Each row of car parking should be less than 75 cars. Maintain a 30-meter separation between the interstate and the parking lots to accommodate a future fourth lane.

<u>Picnic Area</u> - Projections indicate that the picnic area is to be increased from 1.01 hectares (2.5 acres) to 1.82 hectares (4.5 acres). The existing plaza is flat and drainage is a problem. Provide sufficient slope to the new picnic area for proper drainage.

C. Sewer

The following alternatives were evaluated to provide treatment of domestic wastewater increases in conjunction with the general redesign and upgrading of Rest Area No. 12.

Alternative No. 1

Regional collection and treatment by a publicly owned treatment works (POTW).

This alternative involves sanitary sewer services provided by a municipality closest to Rest Area No. 12. The village of Poynette is approximately 4.0 miles from Rest Area No. 12 and would be capable of providing sanitary sewer service to the rest area with the following major components: 1) regional pump station, 2) 16,000 linear feet of forcemain, and 3) two grinder pump stations, interconnecting sewers between Rest Area Nos. 11 and 12, and a connection and service fee for discharging to the Poynette POTW.

Alternative No. 2

Expansion of the existing sewer drain field system.

This alternative is the expansion of the existing sewer drain field system at Rest Area No. 12. The expansion design would be in accordance with the Wisconsin Administrative Code ILHR 83 and would involve the following major components:

1) septic tank replacement, 2) dosing chamber replacement, 3) primary screening chamber, and 4) 70 to 94 percent expansion of the existing drain fields.

Alternative No. 3

Construction of a new sewer drain field system.

This alternative would involve the construction of a new sewer drain field system at Rest Area No. 12. The new design would be in accordance with the Wisconsin Administrative Code ILHR 83 and would have 100 percent area requirements for each "trench type" drain field. The major components of the new design are as follows: 1) primary screening chamber, 2) septic tank, 3) pressurized dosing chamber, 4) pump control panel, 5) distribution manhole, 6) pressure distribution piping, and 7) three trench type drain fields.

functional layout. We anticipate that the ultimate net cost per square foot of the remodel would be approaching the cost of a new building, because of the extensive hand demolition and removal and reinstallation of new systems within the remaining existing building elements. Ultimately, the location of the existing building is incompatable with the site geometry required to effectively meet program needs.

Alternative No. NI

The new building Alternative N1 is the recommended alternative. Due to the extensive remodeling and limitations associated with remodeling the existing building and the limitations the existing building location would impose on new site geometry, the most prudent and cost effective approach to increasing the rest area capacity and addressing program needs, is to construct a new rest area building at a location on the site to best accommodate other site development. A new building can provide the following benefits:

- A wider building to locate lavatories directly outside toilet stalls.
- Better accessibility (ILHR Chapter 69) to and inside toilet rooms.
- All new construction; no rework to match existing materials and systems.
- More site redevelopment options, particularly those which provide shorter or more central access from parking areas.
- A new building could be set higher to avoid existing drainage problems.
- Potential to use the existing building at least until a new building is ready for use.

C. Sewer Service

The three previously listed alternatives were evaluated for selection based on the following criteria: 1) Capital Cost, 2) Annual Cost, 3) Ease of Operation, 4) Expandability, and 5) Service Life.

Alternative No. 1

The nearest POTW to Rest Area No.12 is located approximately 4.0 miles southeast in the village of Poynette. Providing sewer service from Poynette would involve constructing a regional pump station and approximately 16,000 linear feet of force main. This pump station would be located at the northeast intersection of I-90 and CTH CS. The opinion of probable construction cost for the pump station and the force main is approximately \$600,000. This figure does not include the cost for interconnecting sewers between Rest Area Nos. 11 and 12, sewer connection to the pump station, or the cost for connection and service fees for discharging to the

Poynette POTW. Alternate No. 1 was further evaluated during the *Life Cycle Cost Analysis* (LCCA) method. Refer to Exhibit 4 for additional information.

Alternative No. 2

Alternative No. 2 is not recommended. Based on information discussed at the preliminary design meeting conducted on February 13, 1997, expansion of the drain field system will not be further evaluated due to the following reasons:

- The center of the existing drain fields will probably have a limited percolation rate due to a non-pressurized distribution system. Expansion of this system could cause a significantly reduced service life of the entire sewer drain field system.
- The location of the two (2) drain fields is within the proposed pavement areas of the site expansion design.

Alternative No. 3

Alternative No. 3 is the recommended alternative. This alternative offers the best match to the selection criteria for the following reasons:

- The estimated present worth cost of a new sewer drain field system is approximately 29 percent less than the regional collection and treatment Alternative No. 1. Refer to the LCCA for additional information, Exhibit 4.
- The new sewer drain field system will operate similar to the existing system with minimal labor.
- The new system can be installed without affecting the operation of the existing system.
- The new system design will include three (3) individual drain fields with reserve space available for three (3) additional drain fields.
- The new system will allow a longer load-rest period for each drain field thereby extending the service life of the complete system over that of a conventional two (2) drain field system.

X. Recommended Alternative

A. Site Layout

The recommended alternative for Rest Area No. 12 is Alternative No. 7. Details of Alternative No. 7 are as follows:

- A separate maintenance building will be provided off the truck parking area to house:
 - Recycling space required by ILHR Chapter 52
 - Grounds keeping equipment and supplies
 - Maintenance functions
 - Storage of parts and maintenance materials

Sewer C.

Alternative No. 3 is the recommended alternative to provide expanded sanitary sewer service to Rest Area No. 12, which constructs a new sewer drain field system. The proposed system design includes the following components:

- Primary screening chamber
- Combination septic tank/pressurized dosing chamber
- Electrical/pump control panel
- Drain field distribution manhole
- Pressure distribution piping system
- (3) trench type drain fields, approximately 59,900 square feet each -WITH A DESIGN SURFACE &

The proposed trench drain field design and area requirements are based on trench bottoms located immediately below topsoil level with an approximate 36-inch to 48-inch depth of cover. Some excavation into hillsides and regrading of hillsides is expected:

The opinion of probable construction cost range for the installation of the drain fields only at Rest Area No. 12 is \$550,000. This cost estimate includes the following items: excavation of trenches, placement of stone and pipe, geotextile, backfill, and rough grading of trenches, septic tank, dosing chamber, pump, and pressure distribution piping.

Project Costs XI.

Construction of a new Rest Area No. 12 is expected to cost \$3,664.000. Adding 15 percent for construction engineering and contingencies, results in a total cost estimate of \$4,213,600. A summary of costs is shown in the following table:

I. LIFE CYCLE COST ANALYSIS (LCCA) OF WASTEWATER TREATMENT ALTERNATIVES

A Economic Analysis

The opinion of probable construction costs for Alternative No.1, regional treatment and Alternative No. 3, pressure drain field system are presented in Table 1. A site map of the sewer collection system for regional treatment at Poynette is shown in Exhibit #5. A 10% contingency is included for miscellaneous costs not included in the listed items. A conservative life cycle period of 20 years has been assumed for the drain fields. As a result, two drain fields will be replaced at each rest area within the 26 year project period. The cost for this replacement is based on 1997 dollars with an annual construction cost increase of 3.6%.

TABLE 1
OPINION OF PROBABLE CONSTRUCTION COSTS
WASTEWATER TREATMENT ALTERNATIVES

ITEM	ALTERNATIVE NO.1 (\$)	ALTERNATIVE NO.3 (\$)
Trench Drain fields (3)	0	946,625
Drain field Pump/Pipe System	0	253,375
Sewer G.P. & Duplex P.S.	90,000	0
Sewer F.M. to CTH "CS"	376,600	0
Sewer Ext. To "CS"	600,000	0
Sewer Hook-Up Fee	669,220	0
Drain field Replac. (2017)	0	1,262,800
Subtotal	1,735,820	2,462,800
Contingency	173,580	246,280
Total	1,909,400	2,709,080

The annual operation and maintenance (O&M) costs for the two alternatives are presented in Table 2. These calculations are based on a labor rate of \$16.00 per hour, an electrical billing rate of \$0.06 per kilowatt-hour and the cost for septic tank pumping at each rest area once every two years. The volume charge is based on the 1995 rate of \$6.93 per 1,000 gallons, typical for domestic strength wastewater. The village of Poynette sewer user rate and hook up fee information has been provided by General Engineering Company Inc. and is attached to this Exhibit.

TABLE 2

ANNUAL OPERATION AND MAINTENANCE COSTS FOR WASTEWATER TREATMENT ALTERNATIVES

ALTERNATIVE NO.1 (\$)	ALTERNATIVE NO.3 (\$)	
1,500	950	
400	200	
3,300	1,650	
26,400	0	
139,120	0	
170,720	2,800	
	1,500 400 3,300 26,400 139,120	

The life cycle cost analysis (LCCA) of both alternatives is calculated in Table 3. The LCCA has been requested by WisDOT to evaluate the present worth cost to operate each alternative over a given time period and interest rate. This LCCA has been prepared using a design period from 1997 to 2023, or 26 years and an interest rate of 7.5%. The present worth factor for an annual cost under these conditions is 11.293.

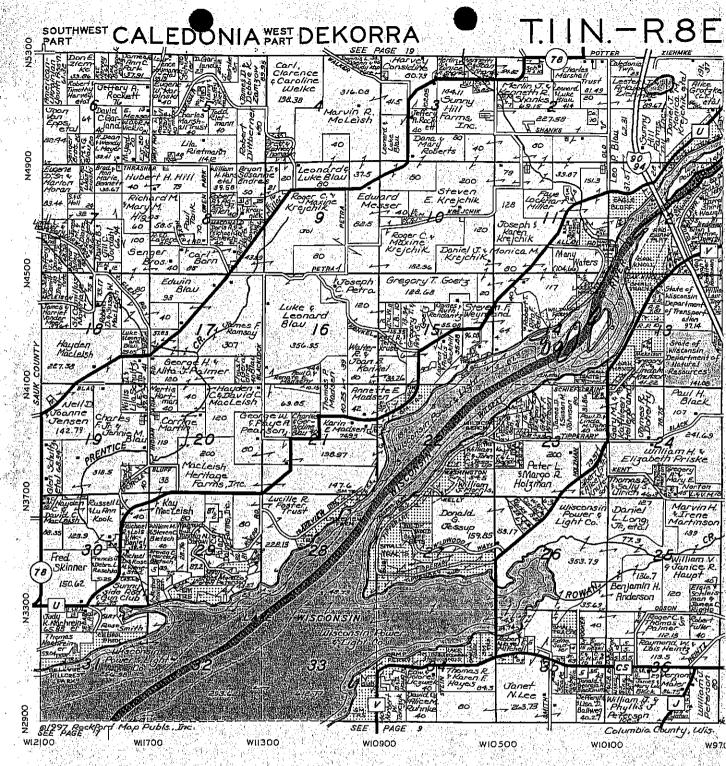
TABLE 3

PRESENT WORTH ANALYSIS FOR WASTEWATER TREATMENT ALTERNATIVES

ITEM	ALTERNATIVE NO.1 (\$)	ALTERNATIVE NO.3 (\$)
Capital Cost	1,909,400	2,709,080
Annual O & M	1,927,940	31,620
Total Present Worth Cost	3,837,340	2,740,700

The LCCA indicates that the cost to construct a regional sewer collection system to the village of Poynette, Alternative No.1, would be \$1,096,640 or approximately 40% more costly than the present worth of constructing Alternative No.3, a trench drain field system at both Rest Area No.11 and No. 12. As a result, Alternative No.3 would be the most cost-effective solution to provide wastewater treatment to both Rest Area No.11 and No.12.

: V	Dekorra Utility District No. 1 Vastewater Collection & Treatment Facilities Plan
<u>-</u>	
	APPENDIX A-4
	ARCHAEOLOGICAL, CULTURAL AND HISTORICAL SITE REVIEW
	DEKORRA UTILITY DISTRICT NO. 1





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 APPENDIX A-5

PUBLIC HEARING INFORMATION

DEKORRA UTILITY DISTRICT NO. 1

TOWN OF DEKORRA

Utility District Meeting Thursday, April 27, 2000 7:00 p.m. Dekorra Town Hall

Agenda:

Jerry Foellmi of General Engineering will be giving report on latest updated information and answering questions.

RESIDENTS OF DEKORRA SANITARY DISTRICT #1 & #2 ARE ALSO INVITED TO ATTEND, AS THIS INFORMATION IMPACTS YOU.

MEMBERS OF OTHER LOCAL SANITARY & UTILITY DISTRICT ARE ALSO WELCOME.

Hugh widson

April Martinson, Town Clerk

if/AM

Published:

April 26, 2000

Posted:

April 22, 2000

Mailed:

April 21, 2000

CC:

Dekorra Utility District members

Dekorra Town Board

Dekorra Plan Commission

Dekorra Sanitary District #1 Board

Dekorra Sanitary District #2 Board

Okee Sanitary District Board Harmony Grove Sanitary District

Bill Booth w/Mead & Hunt

Dave Simon w/WI DOT

Jerry Foellmi w/General Engineering

PUBLIC INFORMATION MEETING

POSSIBLE SEWERING OF DEKORRA'S SANITARY DISTRICTS

10:00 a.m., Memorial Day Saturday (May 27, 2000) - Dekorra Grade School Gym on Bilkie Road

A Public Information meeting for the residents of the Town of Dekorra, Dekorra Utility District No. 1, Dekorra Sanitary District No. 1 and Dekorra Sanitary District No. 2 is scheduled for 10:00 a.m. on Memorial Day Saturday (May 27, 2000) at the Dekorra Grade School Gym on Bilkie Road.

It is the job of your Sanitary District representatives to keep all property owners informed on any new developments, which may affect you, both short-term and long-term. You may or may not know, there are two Sanitary Districts within the Town of Dekorra. The Dekorra Sanitary District No. 1 encompasses the Tipperary Point area and Dekorra Sanitary District No. 2 lies on the south side Whalen Grade almost to Lake Point Drive where it meets with the Town of Lodi's Harmony Grove Sanitary District (see attached map). About a year ago the Town the Dekorra created the Dekorra Utility District No. 1 which is located at the I90-94/CTH CS interchange.

There has been and continues to be significant interest with commercial development at that interchange area, however, potential buyers are turned away by the lack of a centralized sewage collection & treatment system. The Township in the past had looked at constructing a sewage collection system to pump the sewage to Poynette's wastewater treatment plant; however, the cost was very high to the few existing businesses in the area. The Township may have had to carry the debt of this system for some time until additional businesses connected on. As you know, promoting commercial/industrial development within the Township increases the Town's tax base without placing a burden on the School District.

A recent development has occurred which has possibly opened the door for the sewer utility development at the I90-94/CTH CS interchange. That is the upgrading of the Department of Transportation's (DOT) Rest Areas 11 & 12, which are just south of the Wisconsin River and a few miles north of the I90-94/CTH CS interchange. These two Rest Areas are the most heavily used Rest Areas in the state. The amount of sewage from these two Rest Areas can reach 30,000 gallons per day. Over the next 25 years the flow is expected to increase to 80,000 gallons per day. In contrast, the sewage from the existing interchange area businesses amounts to about 5,000 gallons per day. The Township is in the first phase (Facilities Planning) of a three-phase project (planning, design & construction) to potentially join with the DOT's Rest Areas to jointly collect and treat their wastewater. General Engineering Company of Portage is the engineering consultant for the project. They also work with the neighboring communities of Poynette, Harmony Grove, and Okee.

The most likely site for a wastewater treatment plant to serve the Utility District and Rest Areas is just north of rest area 11. This site is relatively close to your Sanitary District. The Town of Dekorra will be required to review the "Regional Design Scenario" in order to obtain the Department of Natural Resources (DNR) approval for the project. The Regional Scenario will mean they will need to look at Dekorra Utility District #1, the Rest Areas and both Dekorra Sanitary Districts. 15 to 20 years ago the

Page 2 May 13, 2000

DNR concurred with a study by the District's engineering consultant (Mead and Hunt) that the "no action" alternate was most appropriate.

You are now entering the new millennium. The actions and choices you make now will affect your Sanitary District, the Lake/River we all enjoy and the environment around you for the foreseeable future. We want to make sure you are making the right choices and going in the right direction.

The Town of Dekorra and its Utility District are faced with some tough decisions that will affect your Sanitary District. The type of Wastewater Treatment Plant selected to serve just the Utility District and Rest Areas needs may not be the best (cost effective) choice if you were part of the group also. If you would choose not to join the group until later it may be much more costly to your Sanitary District than if you were to consider joining the group now.

These are concerns and issues that need to be verified over the next months. You should not make a rash decision over this issue. You do need to be aware however that there may be an opportunity for your District to take a significant step forward in a cost efficient manner.

Preliminary indications show that the cost to construct a new sewerage collection system and joint wastewater treatment facility will cost the average single family household an upfront assessment of about \$3,000 plus about \$60 per month for user fees. This seems like a lot to pay for the benefit of sewer but 20 years ago Harmony Grove and Okee thought the same thing about paying \$30/month. Now they are one of the lower rates in the area. At present the going rate to pump a holding tank is about \$60. There are about 100 holding tanks in the area of the lake districts today.

We encourage you to attend this meeting to ask questions of Dekorra Township, your district representatives and the engineers regarding timing and costs under the joint wastewater collection/treatment scenario

Thank you,

Town of Dekorra
Dekorra Utility District No. 1
Dekorra Sanitary District No. 1
Dekorra Sanitary District No. 2

SANITARY DISTRICT #1 UPDATE

POSSIBLE SEWERING OF DEKORRA'S SANITARY DISTRICTS

It is the job of your Sanitary District representatives to keep all property owners informed on any new developments, which may affect you, both short-term and long-term. You may or may not know, there are two Sanitary Districts within the Town of Dekorra. The Dekorra Sanitary District #1 encompasses the Tipperary Rd area and Dekorra Sanitary District #2 lies on the south side of Whalen Grade almost to Lake point Drive where it meets with the Town of Lodi's Harmony Grove Sanitary District. About a year ago the Town of Dekorra created the Dekorra Utility District #1 which is located at the I90-94 CS interchange.

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We are now entering the new Millenium. The actions and choices we make now will affect our Sanitary District, the Lake/River we all enjoy and the environment around you for the foreseeable future. We want to make sure we are making the right choices and going in the right direction.

The Town of Dekorra and its Utility District are faced with some tough decisions that will affect our Sanitary District. The type of Wastewater Treatment Plant selected to serve just the Utility District and Rest Areas needs may not be the best (cost effective) choice if we were part of the group also. If we would choose not to join the group until later it may be much more costly to our Sanitary District than if we were to consider joining the group now.

These are concerns and issues that need to be verified over the next months. We should not make a rash decision over this issue. You do need to be aware however that there may be an opportunity for our District to take a significant step forward in a cost efficient manner.

Preliminary indications show that the cost to construct a new sewerage collection system and joint wastewater treatment facility will cost the average single family household an upfront assessment of about \$3,000 plus about \$60 per month for user fees. Hook-up fees are extra from the house to the line. This seems like a lot to pay for the benefit of sewer but 20 years ago Harmony Grove and Okee thought the same thing about paying \$30/month. Now

one of the lower rates in the area. At present the going rate to pump a holding tank is about \$60. There are about 100 holding tanks in the are of the lake districts today. Enclosed is a questionnaire that we ask you to fill out and return ASAP. There will be another informational meeting scheduled for this summer where results of this poll will be discussed. Thank you for your time and consideration SD #1-President Martin Schmidt The Shill

QUESTIONNAIRE FOR SANITARY DISTRICT #1

WHICH OPTION DO YOU FAVOR?

- 1. The District can contract to design and install a collection system throughout the District and pump the wastewater to the proposed facility near the DOT Rest Area. The estimated average cost per single family household is \$3,000 for an up front assessment plus about \$60 per household for user fees.
- The District could continue to operate as it currently is with homeowners continuing to use their septic
 systems and those with holding tanks continue to have them pumped and hauled. This is continuing on with
 the finding of the Facility Study done in the 1980's.
- 3. The District could consider subsidizing the holding tank pumping program. An example of this program follows. The District would negotiate a contract with one or more septic tank haulers to pump all the holding tanks in the District. it is expected that the cost per tank would be lies than the current \$60 per pumping.

Each homeowner in the District would help subsidize the pumping costs for the holding tanks by being assessed a monthly fee. Assuming there are 300 homeowners and 85 holding tanks in the District and that the fee to subsidize the pumping cost is \$10 per month to each homeowner, the cost to each homeowner that has a holding tank would be approximately \$25 per month. This is assuming the cost to pump a holding tank is \$60. If the negotiated cost is less, the fee to the homeowner would be adjusted down.

4. Other ideas.....

Thank you for your consideration.

SD #1 President Martin Schmidt

PLEASE MAIL TO:

MARTIN SCHMIDT N3896 TIPPERARY RD. POYNETTE, WI 53955

NOTICE OF PUBLIC INFORMATIONAL MEETING

For the Reconstruction of Rest Area Nos. 11 and 12 I 90/94 (Eastbound and Westbound) Columbia County

ALL INTERESTED PERSONS ARE HEREBY NOTIFIED that Mead & Hunt, Inc., consulting engineers, and the Wisconsin Department of Transportation will host a Public Informational Meeting on Wednesday, June 14, 2000, at the Dekorra Town Hall at W8460 Bilkie Road, in the Town of Dekorra. The meeting will consist of an open-house format and will be held from 6:30 until 8:30 p.m.

The proposed rest area improvements consist of expanding the parking areas and constructing a new building for each rest area. Several alternatives for wastewater treatment will be discussed. Some right-of-way acquisition will be required.

The purpose of this meeting is to obtain public input on the preliminary design of this project. The meeting location is wheelchair accessible, and the hearing impaired can contact the Wisconsin Department of Transportation, District 1 Office at their TDD number, (608) 246-5385, or through the Wisconsin Telecommunication Relay System, (800) 947-3529. Persons who cannot attend this meeting, but have questions or wish to voice their opinions and/or concerns, may contact the following:

Mr. Rusty Chesmore, P.E., Project Manager Mead & Hunt, Inc. 6501 Watts Road, Suite 101 Madison, WI 53719-2700 (608) 273-6380



TOWN OF DEKORRA

WASTE TREATMENT PLANT/ 190/94 WAYSIDE EXPANSION INFORMATIONAL MEETING

for

DEKORRA UTILITY DISTRICT
DEKORRA SANITARY DISTRICT #1
DEKORRA SANITARY DISTRICT #2
& ALL OTHER INTERESTED PERSONS

SATURDAY, SEPTEMBER 2, 2000 10:00 a.m. – 12:00 noon Dekorra Town Hall W8460 Bilkie Road Poynette, WI 53955

Jerry Foellmi & Rob Roth of General Engineering, Inc. will be there to answer questions.

In addition, representatives from WI Dept. of Transportation, WI Dept. of Natural Resources, Mead & Hunt, Columbia County Planning Zoning Dept., and Town of Dekorra Board, Plan Commission, Utility District, Sanitary District #1 & Sanitary District #2 members may be present.

Jerry Foellmi/Rob Roth, General Engineering, Inc.
Mike Dorshorst, Town Board Chairman
Marty Schmidt, Sanitary District #1 Chairman
Hugh Wilson, Sanitary District #2 Chairman

September 2, 2000 Dekorr tility District/Sanitary Districts #1 / 2 Informational Meeting

Informational meeting called to order by Town Board Chairman Mike Dorshorst. Present from Town Board: Mike Dorshorst, Norm Wills, Ray Hamilton; Sanitary District #1: Marty Schmidt, Ken Erdahl;

Sanitary District #2: Hugo Olson; Utility District: Jeff Wendt, Robt. Blosser; General Engineering: Jerry Foellmi, Rob Roth, Kory Anderson; Mead & Hunt: Bill Booth; WI DOT: Dave Simon; WI DNR: George Osipoff; Columbia County Planning & Zoning: letter from Tom Robson. Residents/property owners

present: 90.

Jerry Foellmi of General Engineering explained exactly where San. Dist 1 and 2 are located and the Utility District. Explained that unlike the San Districts the Utility District can change and grow. He explained that several businesses have in the past or are now interested in developing in the Utility District area, but because of no sewer/water system available they take their interest elsewhere. Described the present sewage system at the I90/94 waysides and expansion plans, with added wastewater treatment needs. Also described Poynette's wastewater treatment system, which goes into Rowan Creek, with very stringent limits as to what they allow into the creek. So any addition to their treatment plant for properties not in Village limits is not desirable. Thus, the DOT is looking to work with the Town of Dekorra in developing a wastewater treatment plant that would benefit the waysides and the town. Harmony Grove/Okee is another option. Went on to explain the various areas looked at for location of the treatment plant. Location on DOT-owned land along southbound side of I90-94, south of wayside, at intersection of Hwy. V seems to be best site at this time.

Next step is design of the treatment plant. Harmony Grove/Okee is currently planning expansion to their system, which makes it possibly available to both Dekorra Sanitary districts.

There are options of various types of wastewater treatment plants for Dekorra. Recirculating Sand Filter plants are fairly efficient and low cost, but hasn't been tested at fairly high flows. Retention Pond plants require large area for the pond. Several other types described. With the waysides, both San Districts plus Utility Dist we are talking up to 600,000-gallons/day capacity.

Dept. of Commerce "Com 83" says there are a few more options for you where you have property that is not able to have a regular on-site system (septic tank/drain field). Many areas along shoreline the only option before was holding tanks (or areas where septic tank/drain field has failed and there is no room to move it). Described several types of systems being allowed under this Com 83. All still require a drain field of some size. Jerry asked for input from anyone who has put in a holding tank recently. One gentleman said he put one in 6 years ago and it cost close to \$3,000. Then approx. cost is \$60-80 to pump that holding tank each time it's needed.

Jerry Foellmi explained that preliminary cost projection to hook up to sewer is \$3,000. with \$60 per month fee/monthly. Information given as to how Poynette did the initial hook up requirements, etc... Their current cost is \$35/month. Kelly Lake near Green Bay pays about \$40/month. In 20 years the \$60/month fee will look like a real deal. Arena is looking at \$50/month. Black Earth/Mazomanie is approx. \$50/month. If one or both Sanitary Districts opt out now, the Utility District and DOT will build whatever wastewater treatment plant is the most cost-efficient for their use. Jerry does not believe DNR will go in and force the 2 sanitary districts to join in now. But if they wait, they may end up putting in a system at much more cost. Yes there is initial hook-up cost and monthly fee cost, but it is an environmental benefit to go to one wastewater treatment system rather than all the current various individual private systems.

Question was raised as to if the area where the treatment plant is being planned is a natural prairie grass and wildlife area. Jerry answered that it is and showed on map where it is and who owns it. In the expansion of the rest areas a portion of that will be taken away. Jerry says it depends on the type of system. Bill Booth said that in their development plans they try not to disturb that type of area, and they also plant prairie grass and many of their areas have actually gained acreage of natural areas.

Question raised as to if this area wasn't already planned to be used for septic by the waysides anyway if wastewater treatment doesn't become available. Bill Booth said not quite in that area.

Question raised as to why several small rest areas have been closed. Bill Booth said it is more cost efficient to have a few large rest areas instead of lots of small ones (currently eliminating 4), and they look at use and availability of hooking on to local wastewater treatment.

Question to as what exactly ...e \$3000 hook-up cost includes. Jerry 1 ...lmi explained it does not include the costs to hook up from your house to the street, and the cost of abandoning your current septic system. There could also be the initial hook up fee imposed by the town.

Question asked as to whether manholes requires curbs and gutters be installed also. Jerry Foellmi said no, as in Harmony Grove.

Question asked as to whether people in the sanitary districts would be required to or have the option of whether they want to hook on. George Osipoff said there is a Wisconsin State Statute that allows pro-rated hook up fees for those who have HAD to put new systems in recently. Also sometimes a "grace period" is allowed. It is up to the sanitary district to decide whether it will be mandatory NOW, etc...

Question raised as to what is the matter with holding tanks. Jerry Foellmi explained that really nothing. But the people who pump it are having more and more problems as to where they can get rid of it. If Dekorra puts in a wastewater treatment plant then those pumpers will probably be coming to our treatment plant to dispose of it from what they've pumped from the tanks of those who are not hooked up to it.

Question raised as to whether owners of vacant property would be required to pay the hook up fee now before the property is developed, or deferred tax, etc... Jerry Foellmi answered that probably yes, but exactly how much depends on a variety of factors.

Question raised as to if the sanitary districts decide to hook on now will they become part of the utility district. Jerry answered that the sanitary districts can remain their own "government" body. Another "twist" that could happen is: the town could decide that the sanitary districts are not active enough and dissolve them.

Question raised as to why would a part time resident have to pay the \$60/month when they aren't there all the time, why pay the same as someone who lives here, and why not based on the amount discharged into the system. Jerry Foellmi explained because we don't have a public water service; the town isn't going go put water meters on everyone's well. Question raised as to why not meters on everyone's well. Jerry answered that meters on wells that are in sandy areas have a high failure and wrong reading rate. Plus then you have additional cost of having someone to go around and read these meters monthly, calibrate them and repairs.

Question raised as to whether WI DOT is paying any part of this, and to whether there is any federal money available for this. Dave Simon explained that WI DOT pays its share. He explained how the state/federal budgets for this, which is done just before construction time. He explained the WI DOT also pays an impact fee, and they pay the monthly fee also. They do have a water meter on their well. There may also be additional funds available – if they can save money by hooking on to Dekorra instead of Poynette then the WI DOT would be willing to contribute some of the money they save towards the cost of the plant.

Question raised as to whether the sanitary districts have any monies in their budgets. Ken Erdahl answered that those districts haven't been taxed anything on their bills for over 10 years. Currently Sanitary District #1 has about \$13,000 in its account.

Comment made that if Dekorra Utility District/WI DOT go ahead without the sanitary districts, the treatment plant built will be based only on their needs. Then if in the future the sanitary districts decide to hook on, then they (the sanitary districts) will have the burden of not only the connection charges, but the entire costs related to adding on to the treatment plant. And in 5 years you don't have the added funds from state/government.

Jerry Foellmi added there is such things as Clean Water Act loan @ 3% - 5% and other government-related funding possibilities.

Question raised as to who exactly makes the decision as to whether the utility district and the sanitary districts decide whether they are in or out. The sanitary districts are government boards (3 members each) so they make the decision for the people in their area. The decision has not been made yet.

Straw vote: (Are you in favor of connecting to a wastewater treatment plant at this time)

District 1 – In favor: 17, Not in favor: 22, Failed: 22-17

District 2 – In favor: 4, Not in favor: 10, Failed: 10-4

TOTALS: In favor: 21, Not in favor: 32, Failed: 32-21

Jerry Foellmi explained that the time to make the final decision as to who is in and who is out will probably <u>HAVE TO</u> be made this fall.

April Martinson Dekorra Town Clerk

TOWN OF DEKORRA

SANITARY DISTRICT #1 PUBLIC MEETING SANITARY DISTRICT #1 BOARD MEETING Saturday, January 13, 2001 9:00 a.m. @ Dekorra Town Hall

PUBLIC HEARING AGENDA:

(1) Final questions and discussions regarding connection of Sanitary District #1 to proposed Dekorra wastewater treatment plant.

BOARD MEETING AGENDA:

- (1) Sanitary District #1 Board final vote on above.
- (2) Letter of intent regarding above to General Engineering Company, Inc.

Marty Schmidt, Chairman Dekorra Sanitary District #1Board

MS/am

Notice is hereby given that a majority of the members of the Dekorra Town Board may attend this meeting to gather information about a subject over which the Town Board has an interest. No Dekorra Town Board action will be taken at this meeting.

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